

FIG. 2

Example:

TF1=15.325 microseconds - High\_capacity = OC-192

TF2 = 125 microseconds - Low\_capacity = OC-3

$\Rightarrow c = 64 = (OC-192/OC-3)$

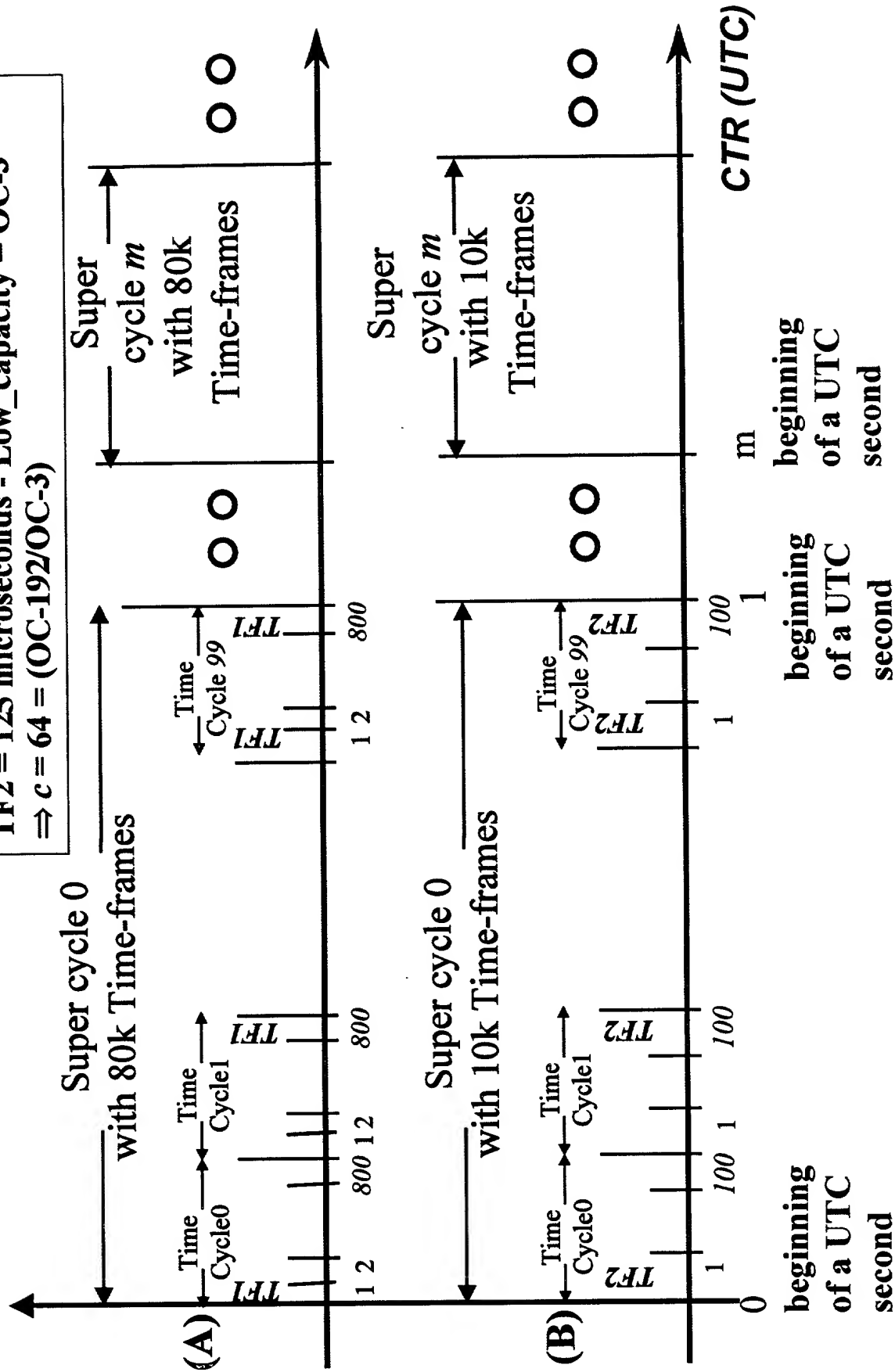
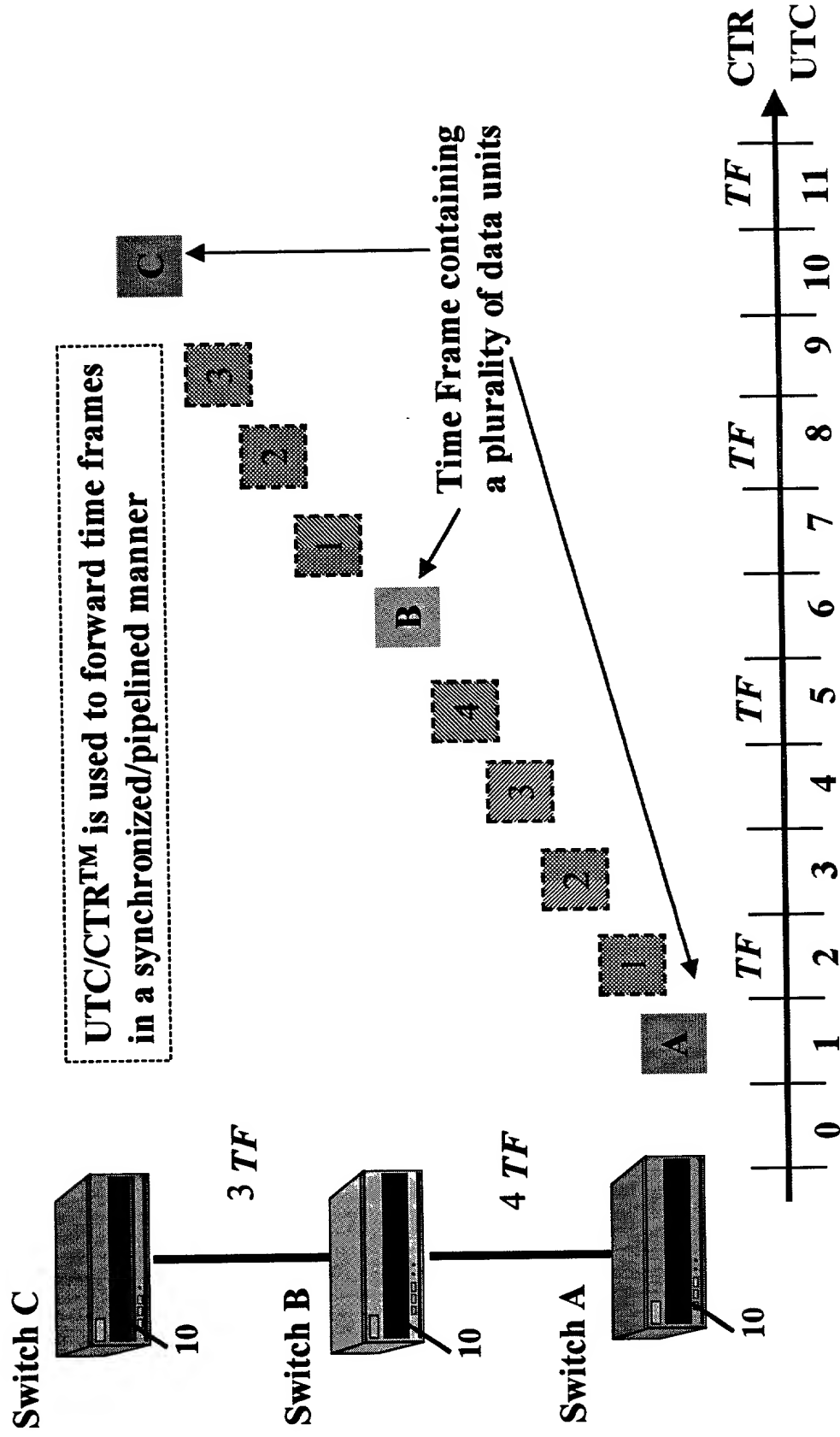
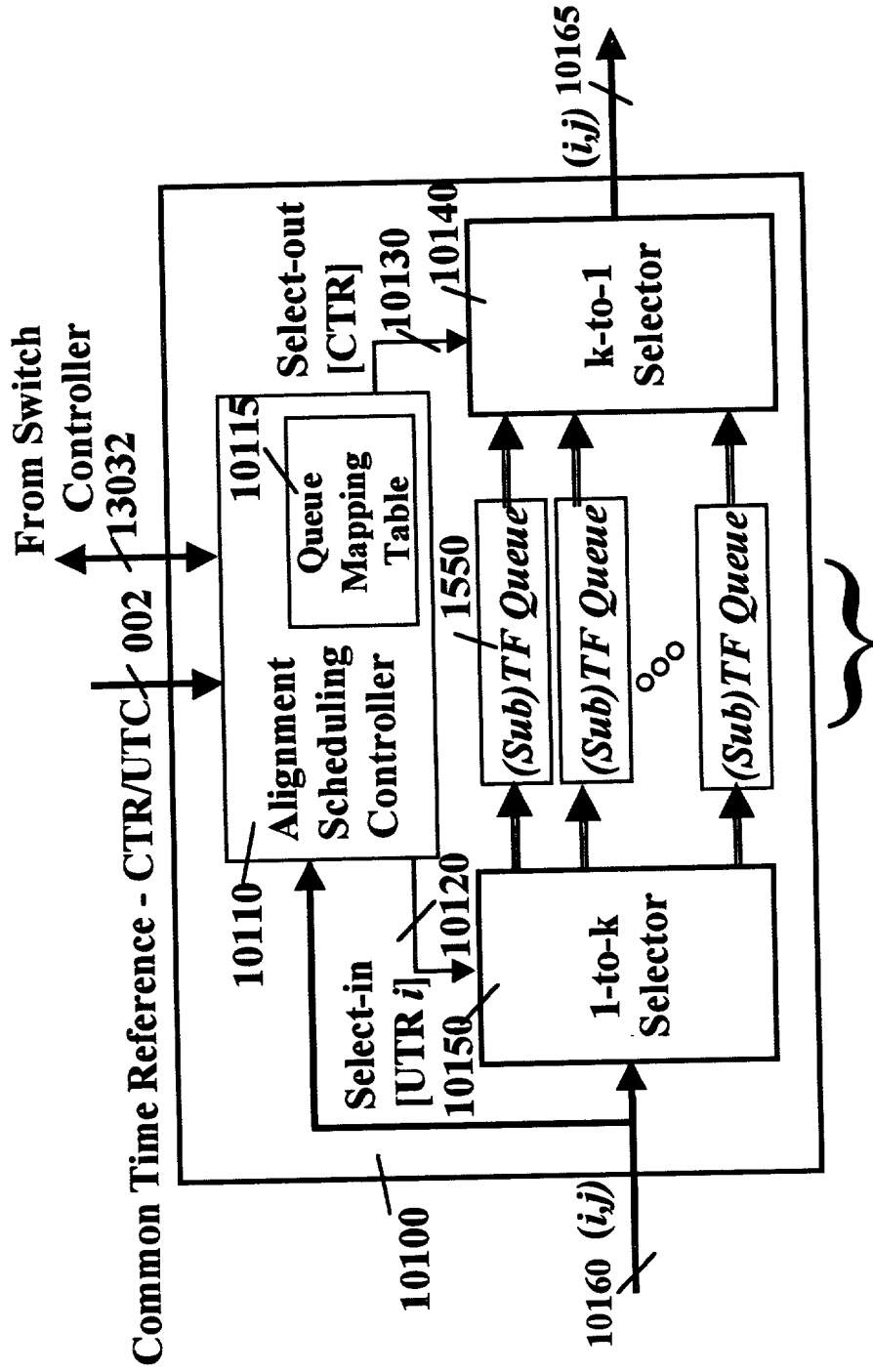


FIG. 3

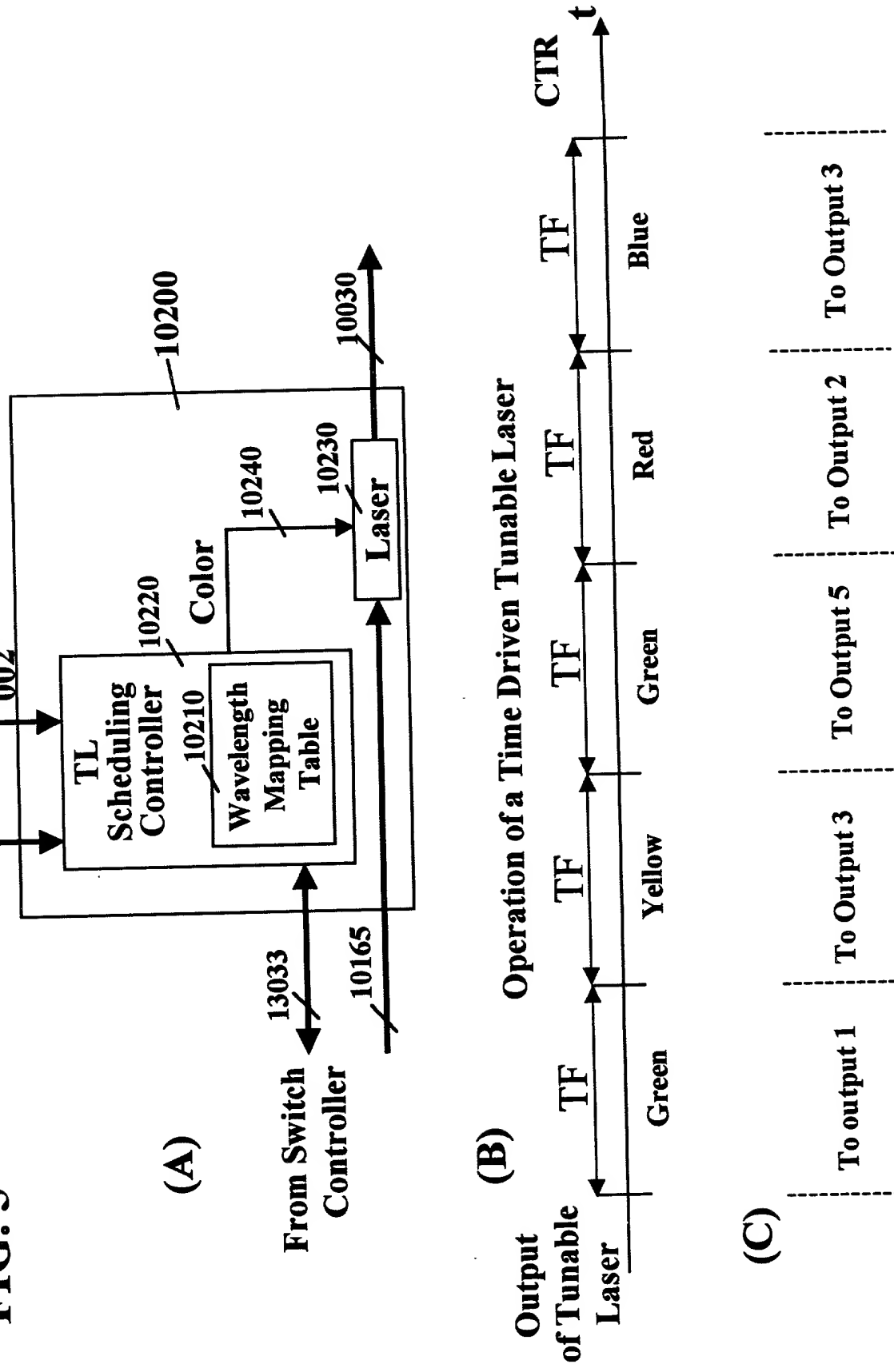




Alignment Subsystem for high capacity Channel  $j$  at Input Interface  $i$ .  
Interface  $i$  with a Plurality of Sub-Time Frame Queues

TF $i_j$ : Time frame duration on channel  $j$  at Input Interface  $i$ .  
UTR $i$ : UTR on link connected to Input Interface  $i$

**FIG. 5** Common Time Reference - CTR/UTC



Implication on a Wavelength Division De-multiplexer of a downstream switching system

FIG. 6

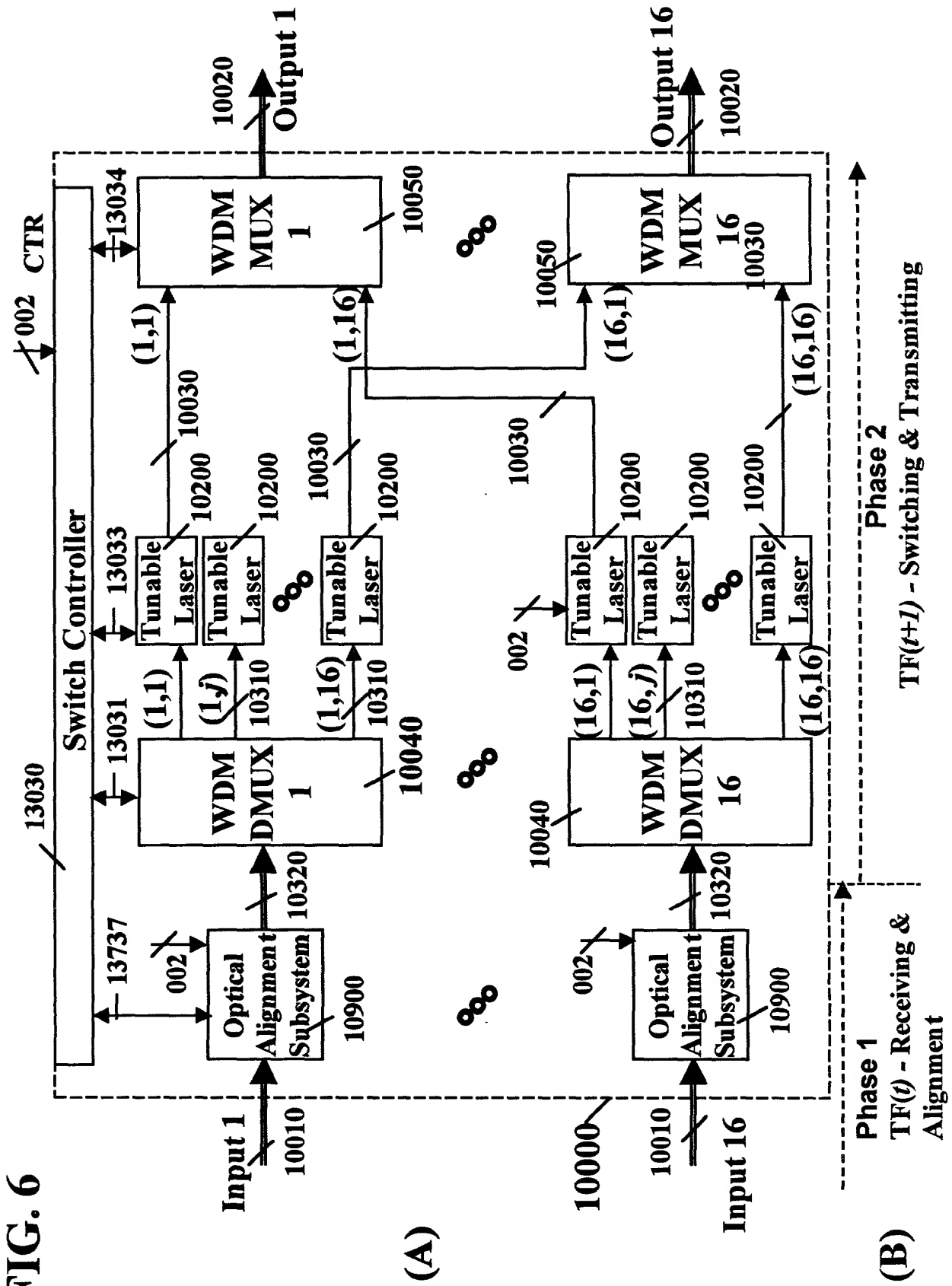
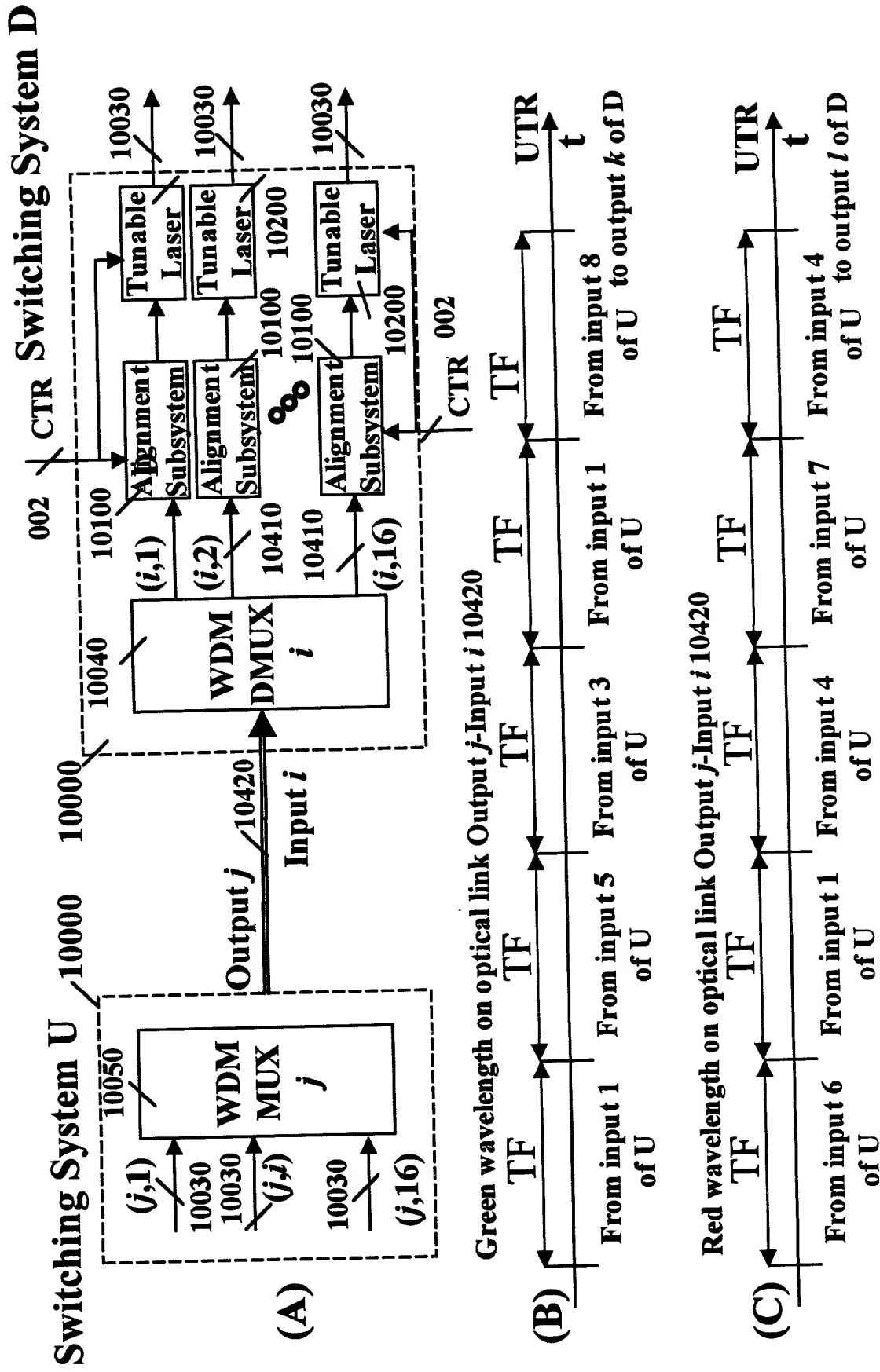
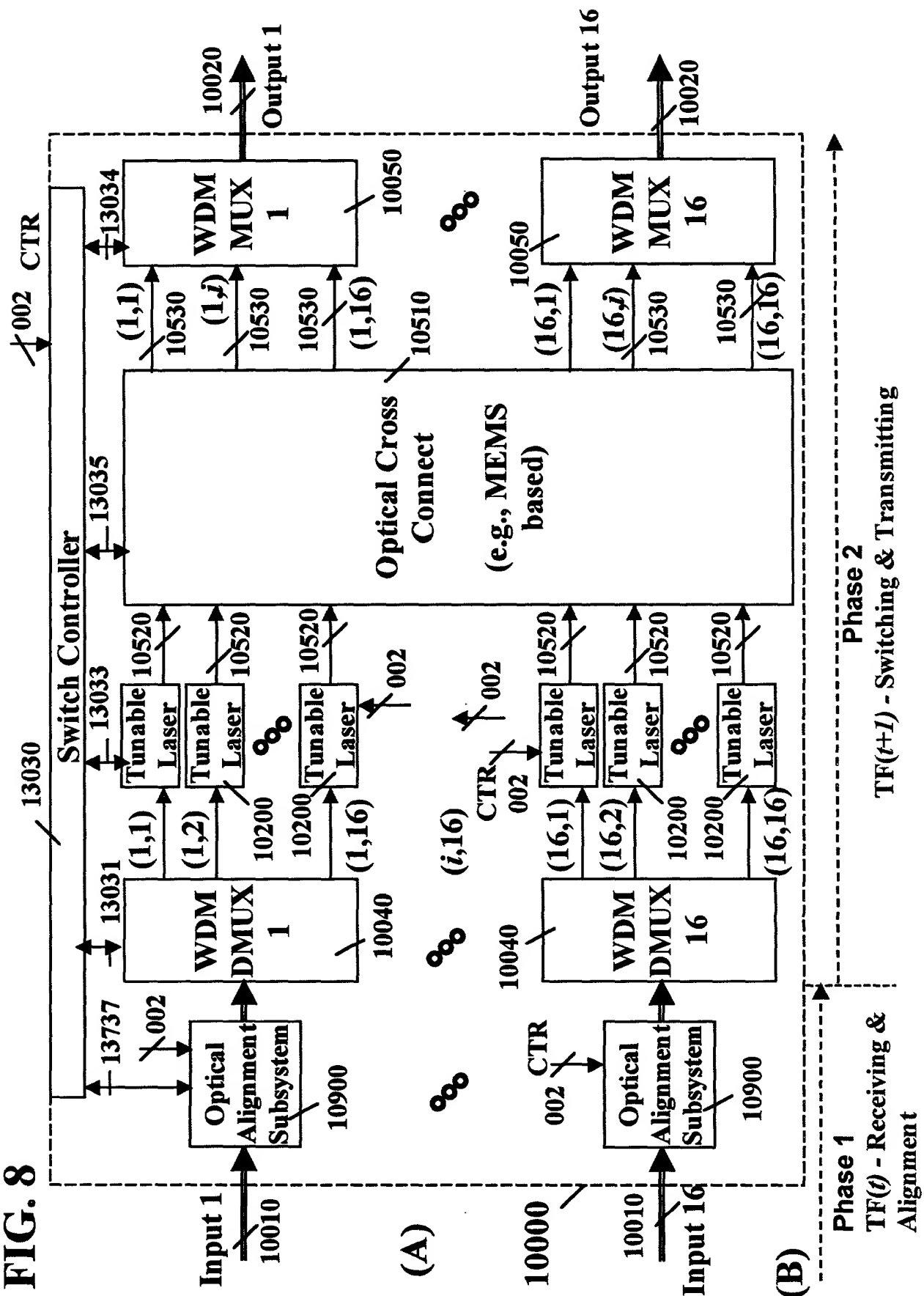


FIG. 7



**FIG. 8**





1	100	100	100
2	100	100	100
3	100	100	100
4	100	100	100
5	100	100	100
6	100	100	100
7	100	100	100
8	100	100	100
9	100	100	100
10	100	100	100
11	100	100	100
12	100	100	100
13	100	100	100
14	100	100	100
15	100	100	100
16	100	100	100
17	100	100	100
18	100	100	100
19	100	100	100
20	100	100	100
21	100	100	100
22	100	100	100
23	100	100	100
24	100	100	100
25	100	100	100
26	100	100	100
27	100	100	100
28	100	100	100
29	100	100	100
30	100	100	100
31	100	100	100
32	100	100	100
33	100	100	100
34	100	100	100
35	100	100	100
36	100	100	100
37	100	100	100
38	100	100	100
39	100	100	100
40	100	100	100
41	100	100	100
42	100	100	100
43	100	100	100
44	100	100	100
45	100	100	100
46	100	100	100
47	100	100	100
48	100	100	100
49	100	100	100
50	100	100	100
51	100	100	100
52	100	100	100
53	100	100	100
54	100	100	100
55	100	100	100
56	100	100	100
57	100	100	100
58	100	100	100
59	100	100	100
60	100	100	100
61	100	100	100
62	100	100	100
63	100	100	100
64	100	100	100
65	100	100	100
66	100	100	100
67	100	100	100
68	100	100	100
69	100	100	100
70	100	100	100
71	100	100	100
72	100	100	100
73	100	100	100
74	100	100	100
75	100	100	100
76	100	100	100
77	100	100	100
78	100	100	100
79	100	100	100
80	100	100	100
81	100	100	100
82	100	100	100
83	100	100	100
84	100	100	100
85	100	100	100
86	100	100	100
87	100	100	100
88	100	100	100
89	100	100	100
90	100	100	100
91	100	100	100
92	100	100	100
93	100	100	100
94	100	100	100
95	100	100	100
96	100	100	100
97	100	100	100
98	100	100	100
99	100	100	100
100	100	100	100

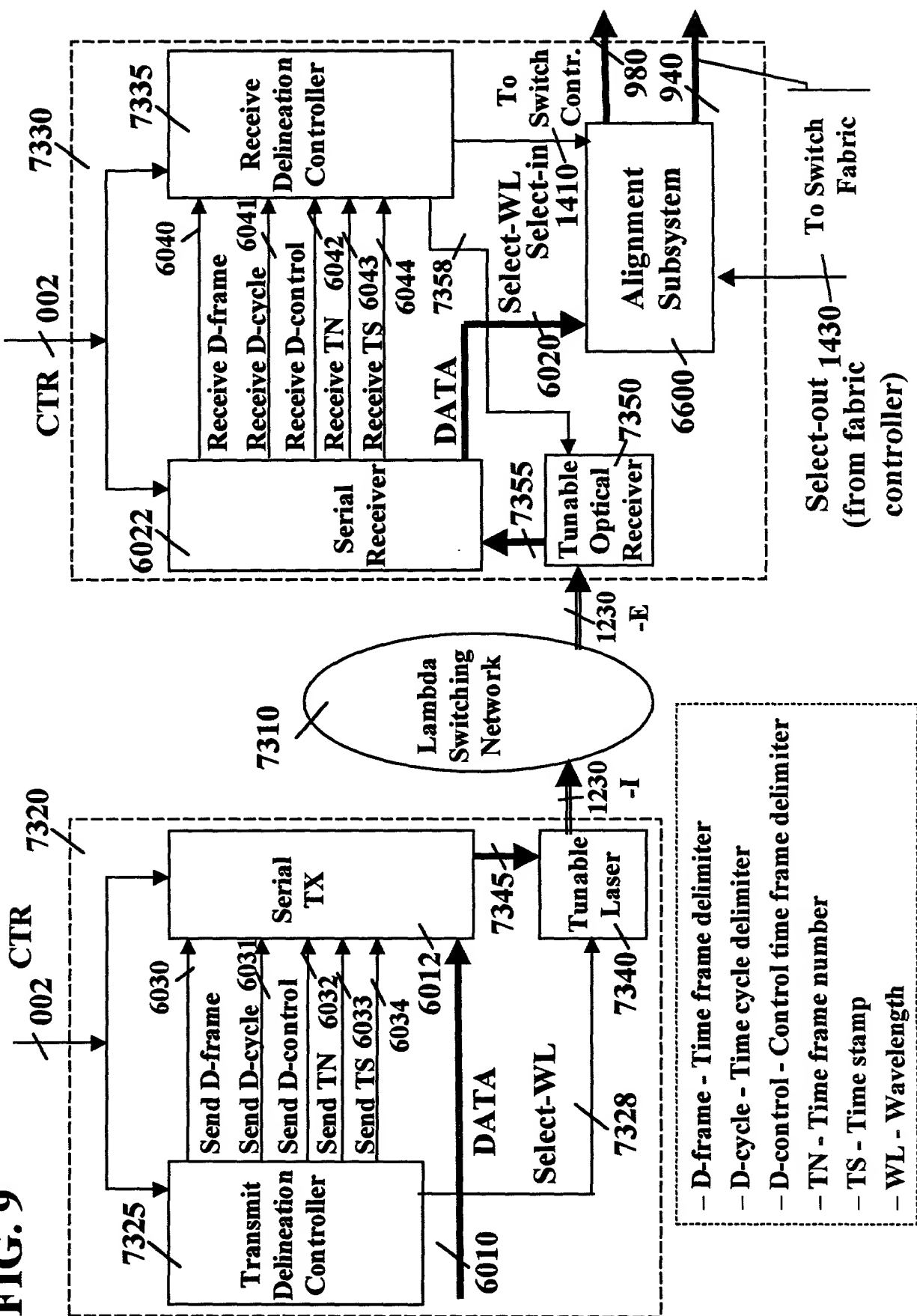


FIG. 10

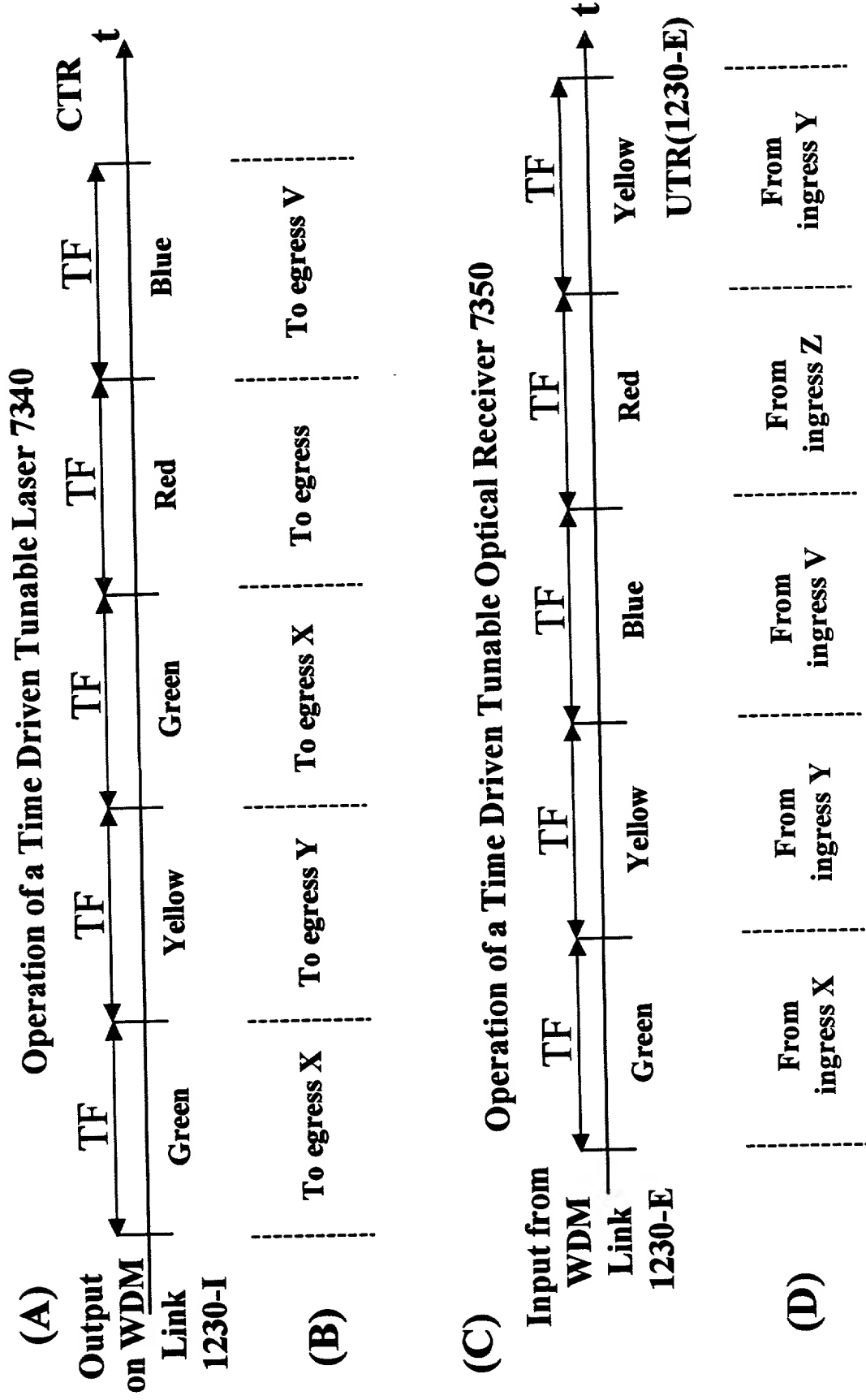


FIG. 11

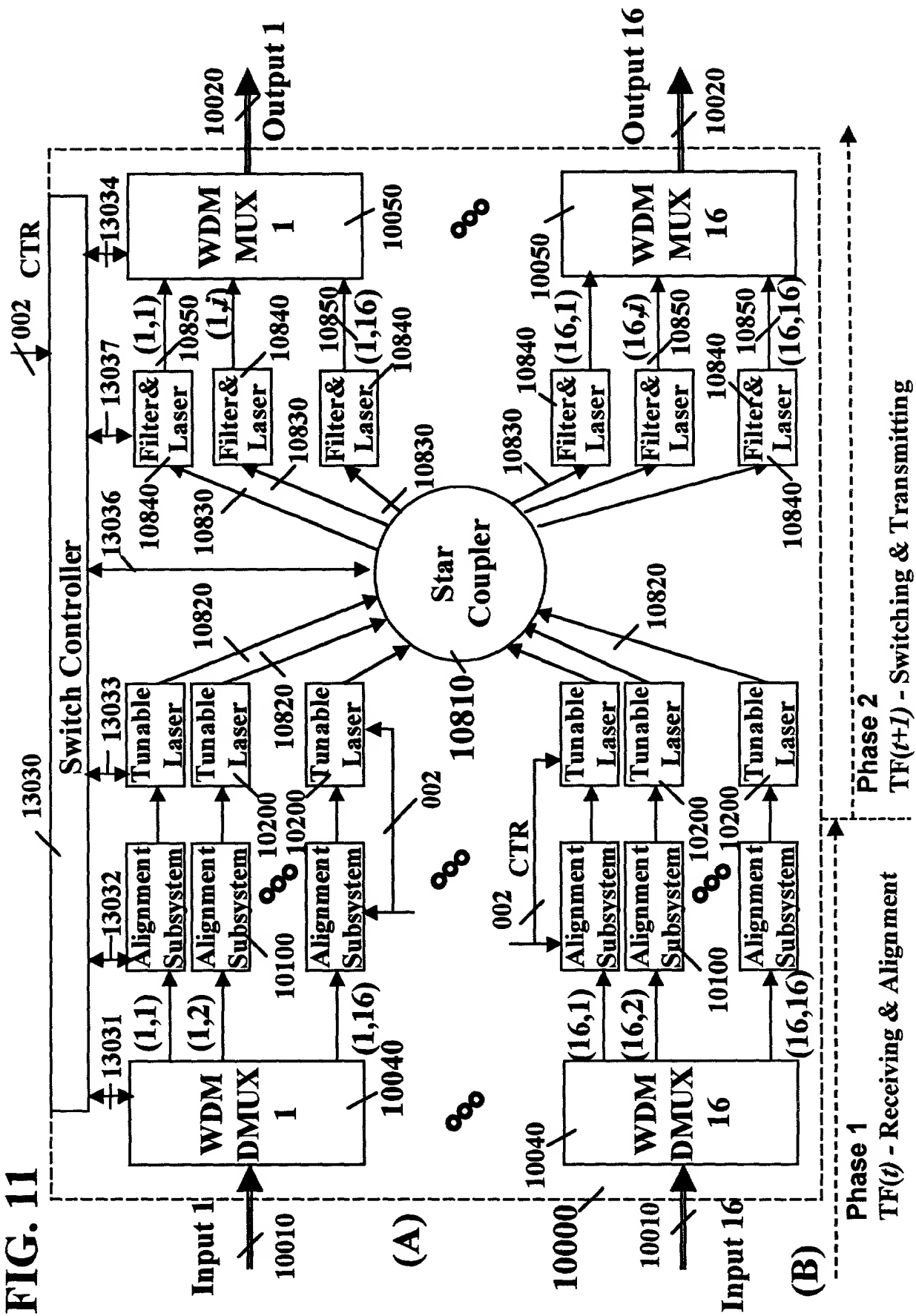


FIG. 12

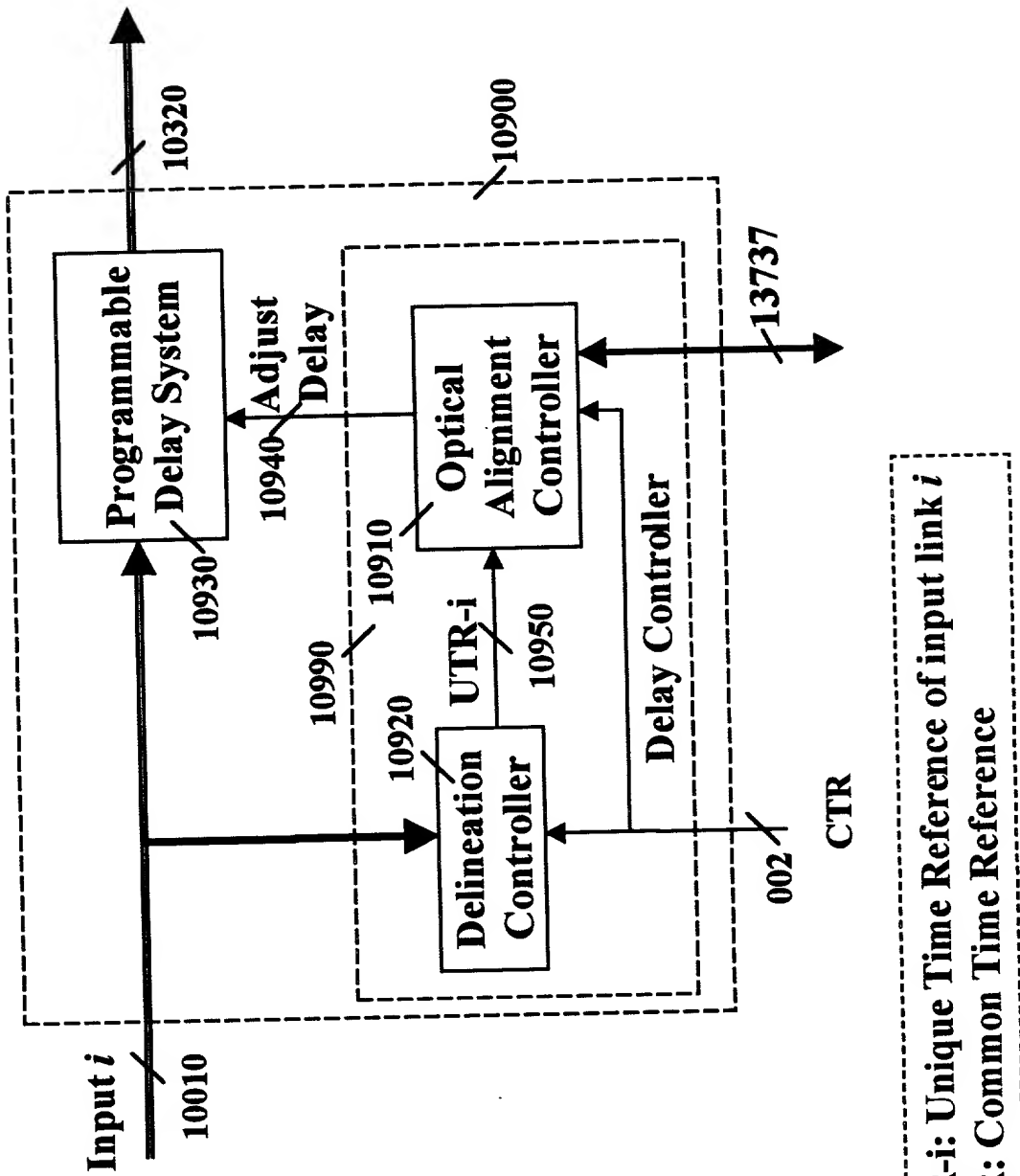


FIG. 13

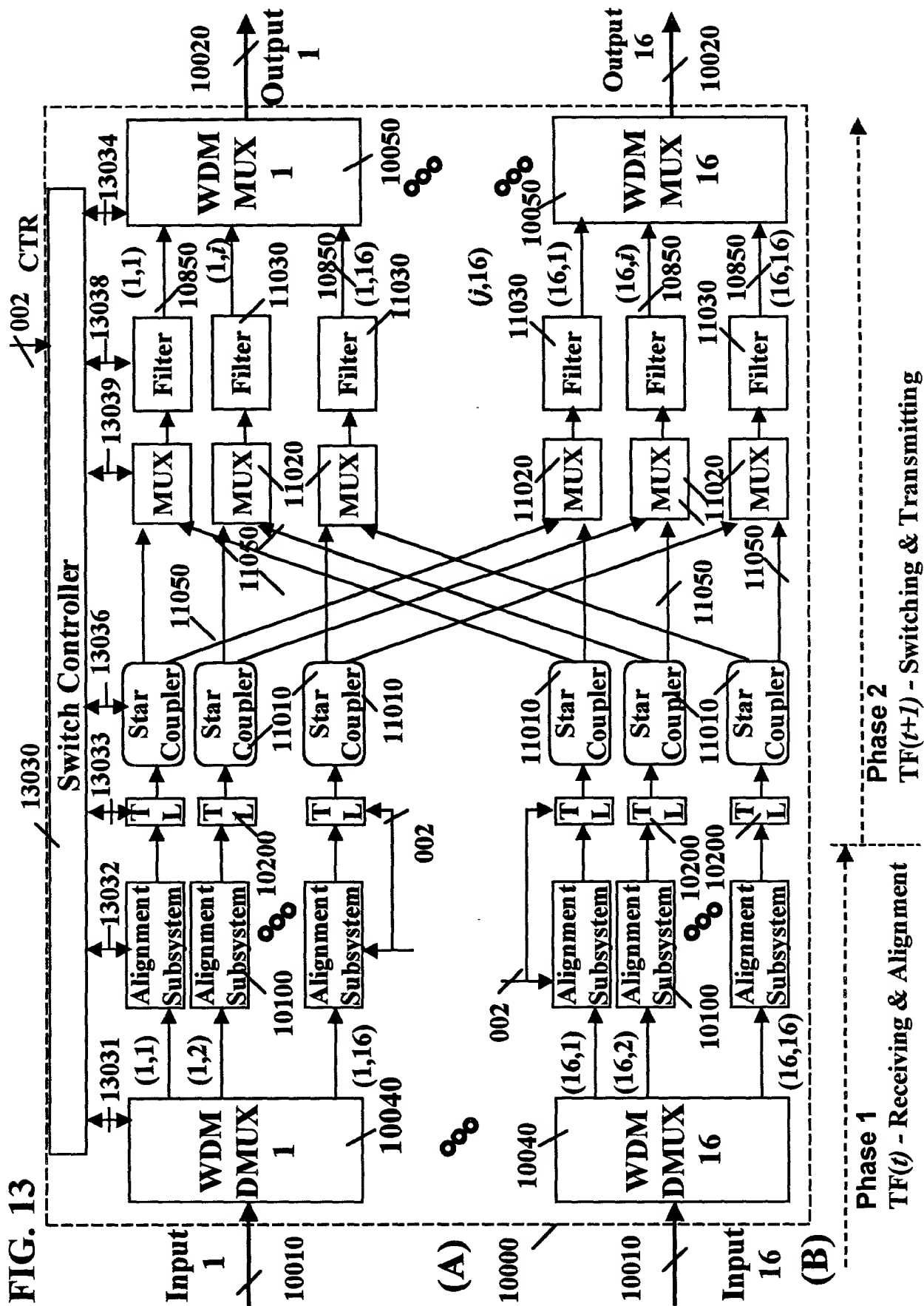


FIG. 14

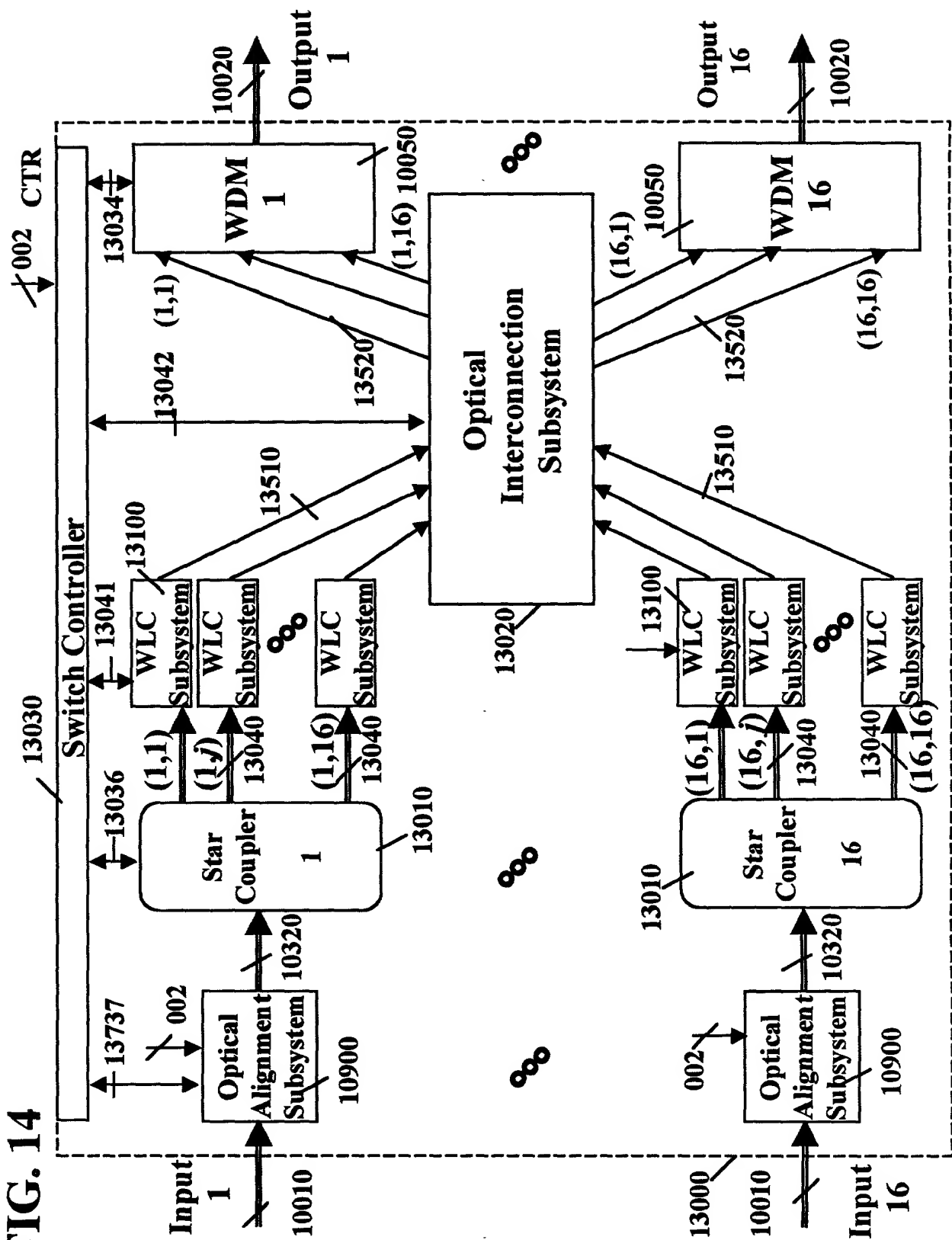
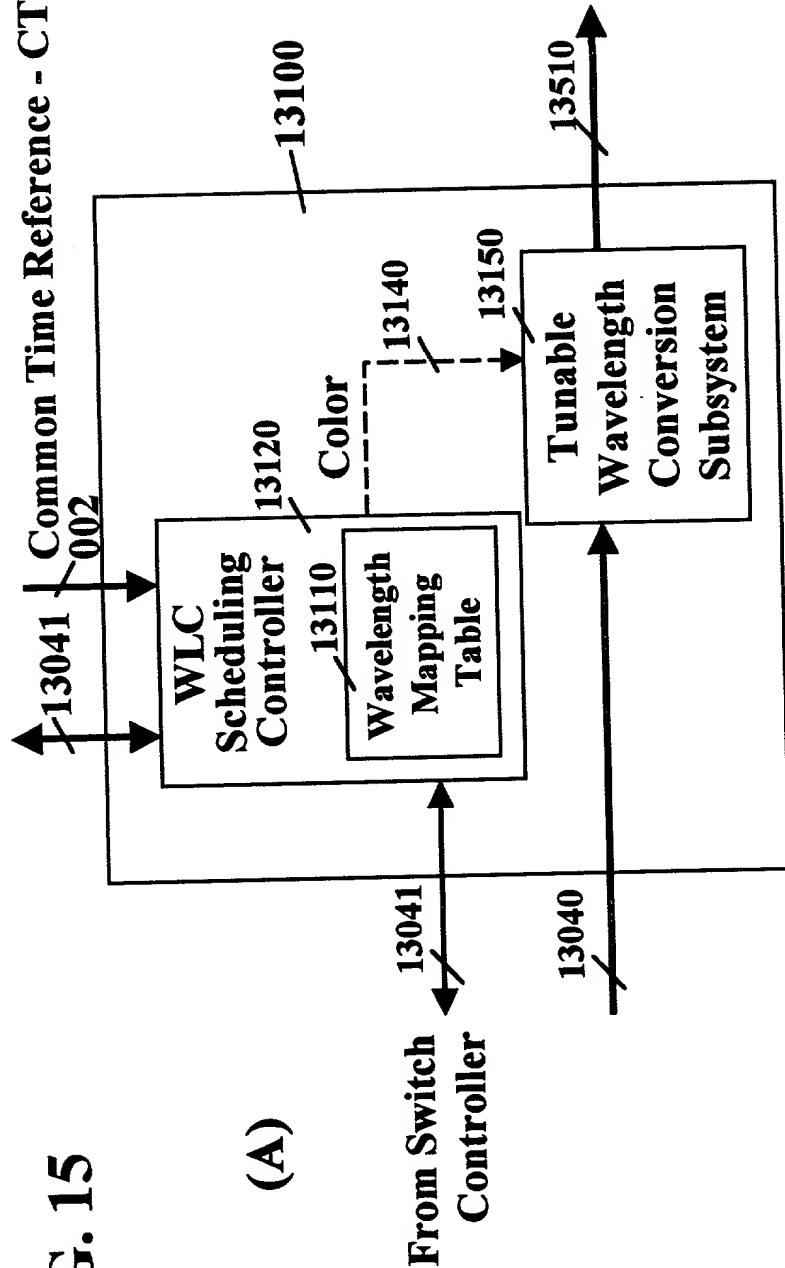


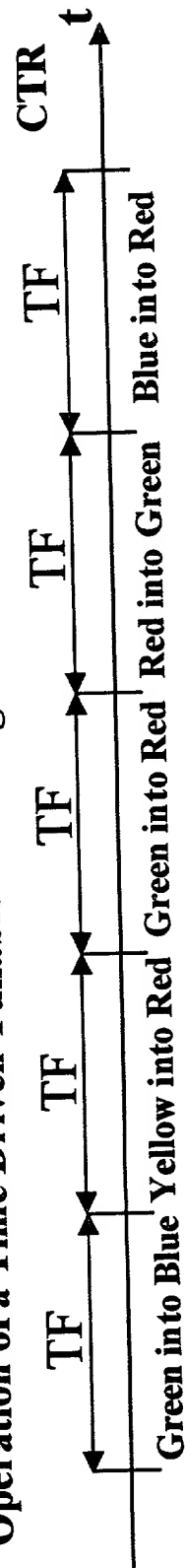
FIG. 15 Common Time Reference - CTR/UTC



(A)

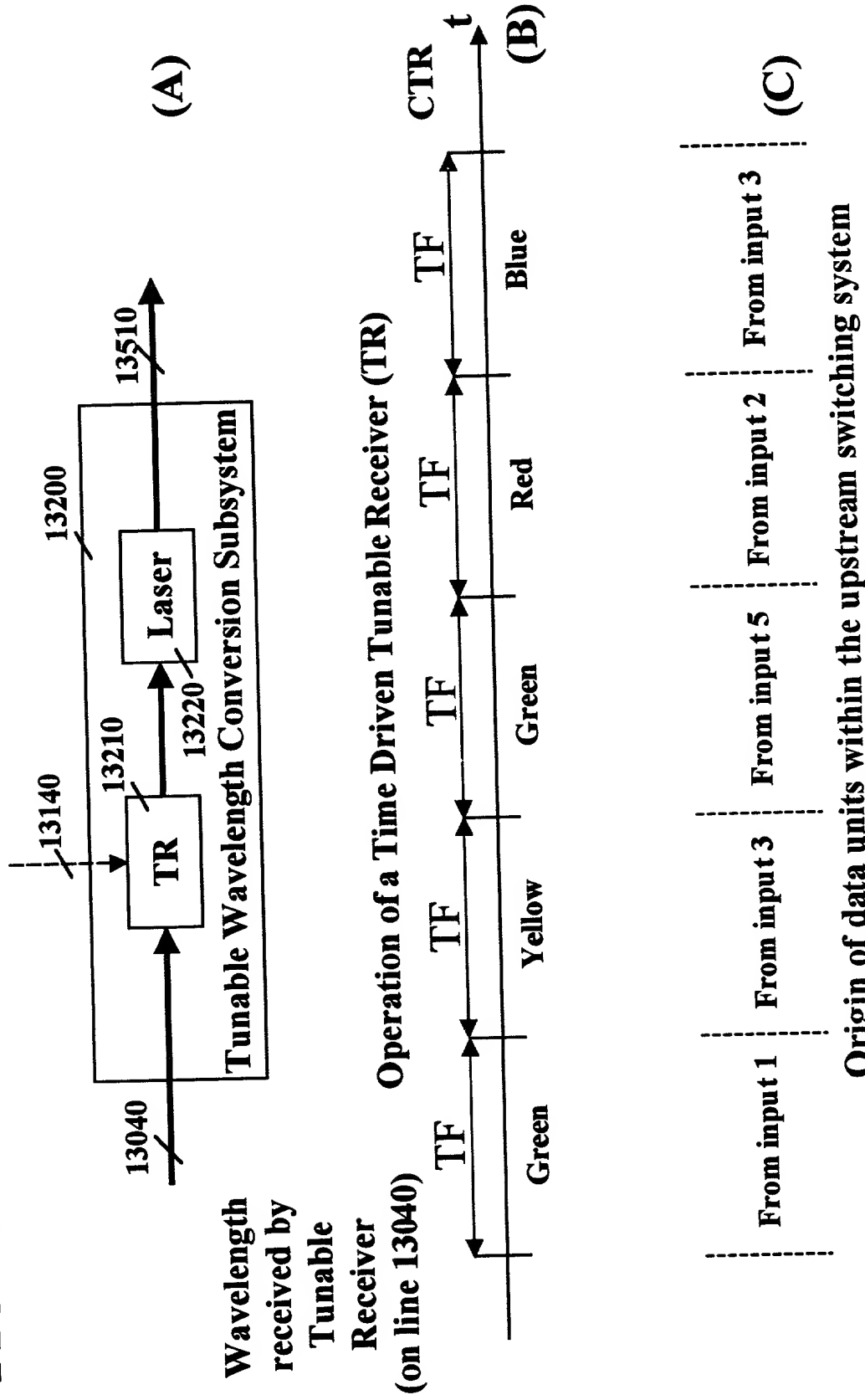
(B)

Operation of a Time Driven Tunable Wavelength Conversion Subsystem 13150



Wavelengths received 13040 and emitted 13510 by  
Tunable Wavelength Conversion Subsystem 13150

FIG. 16





**FIG. 17**

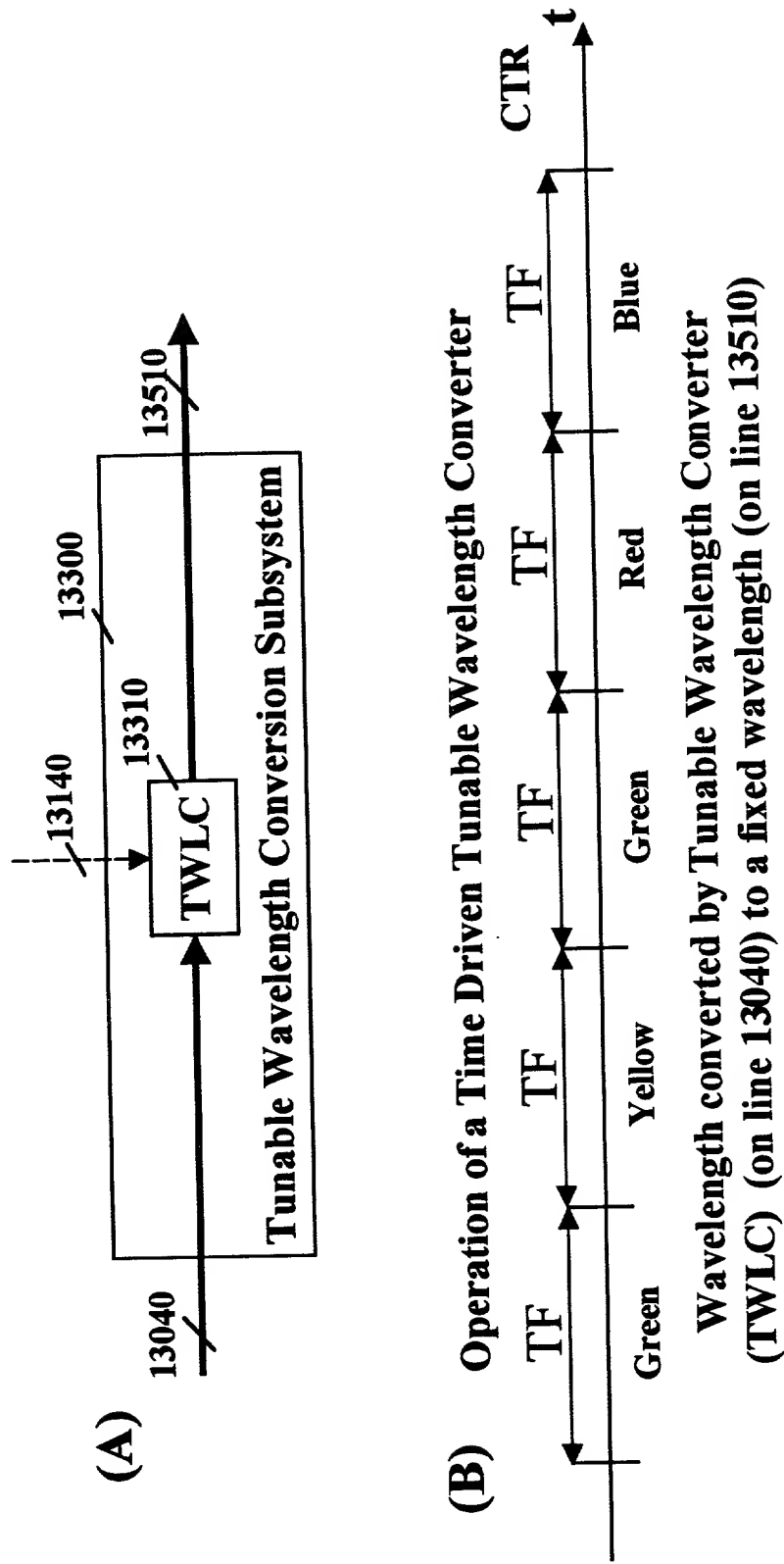
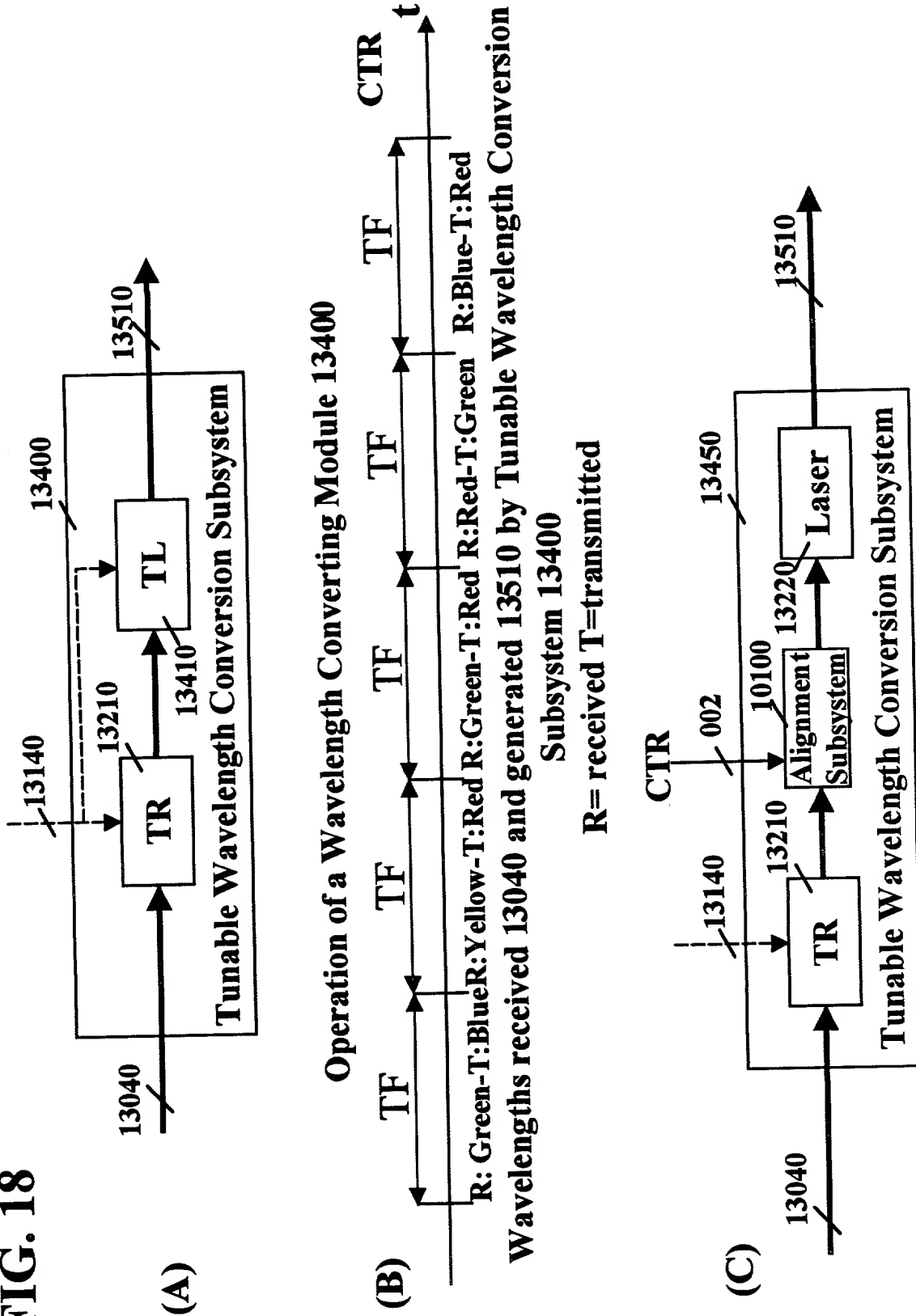


FIG. 18



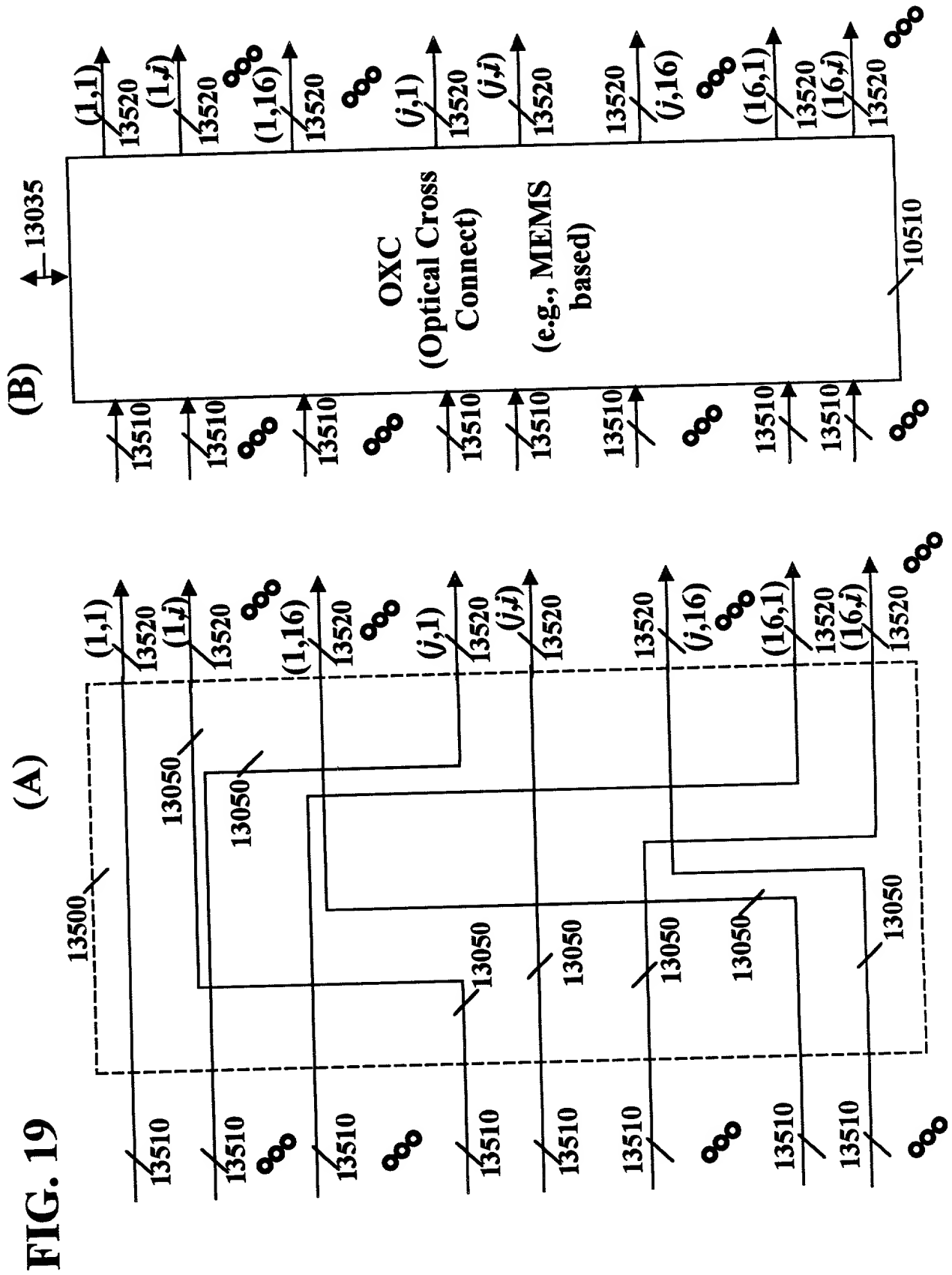


FIG. 20

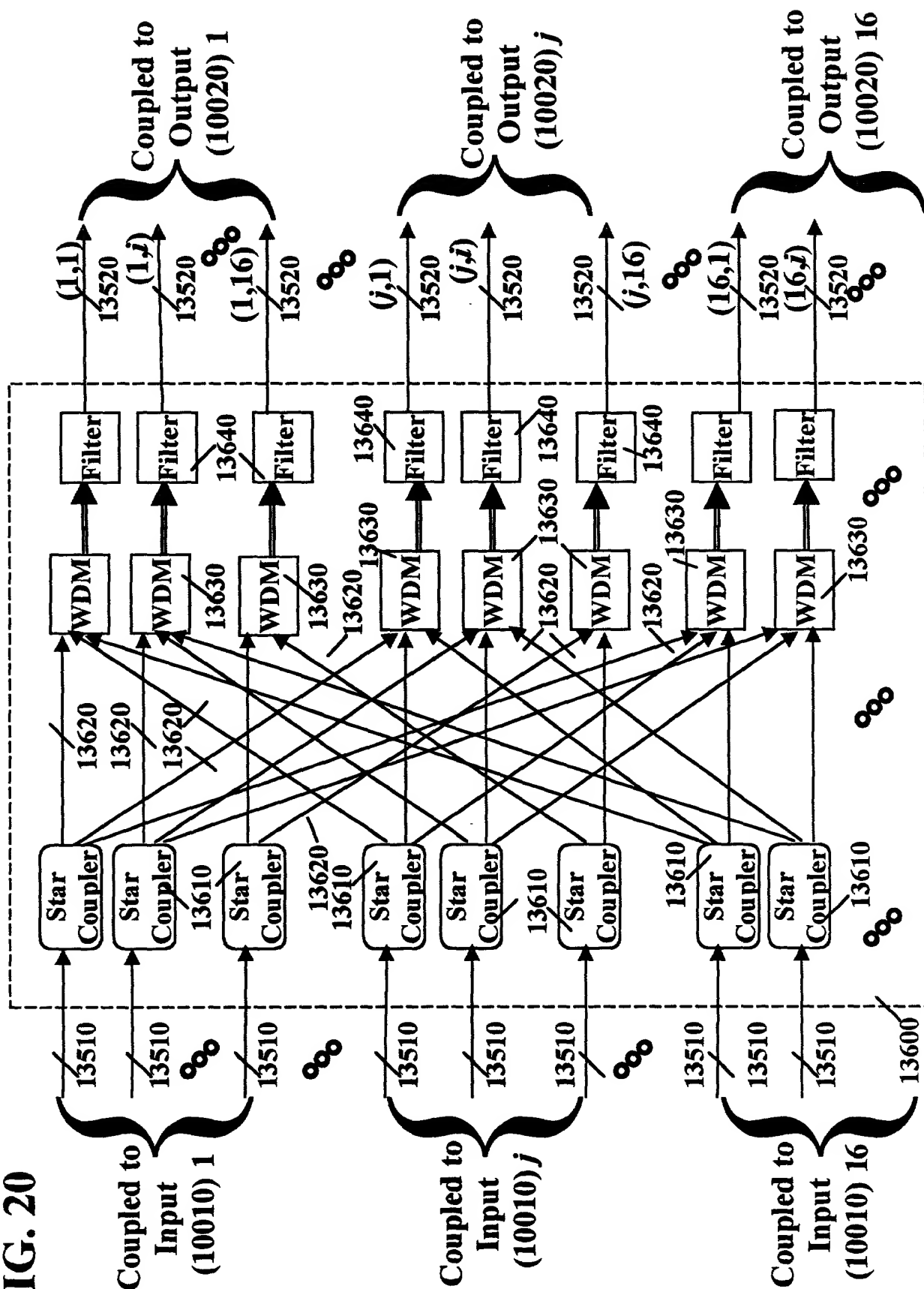
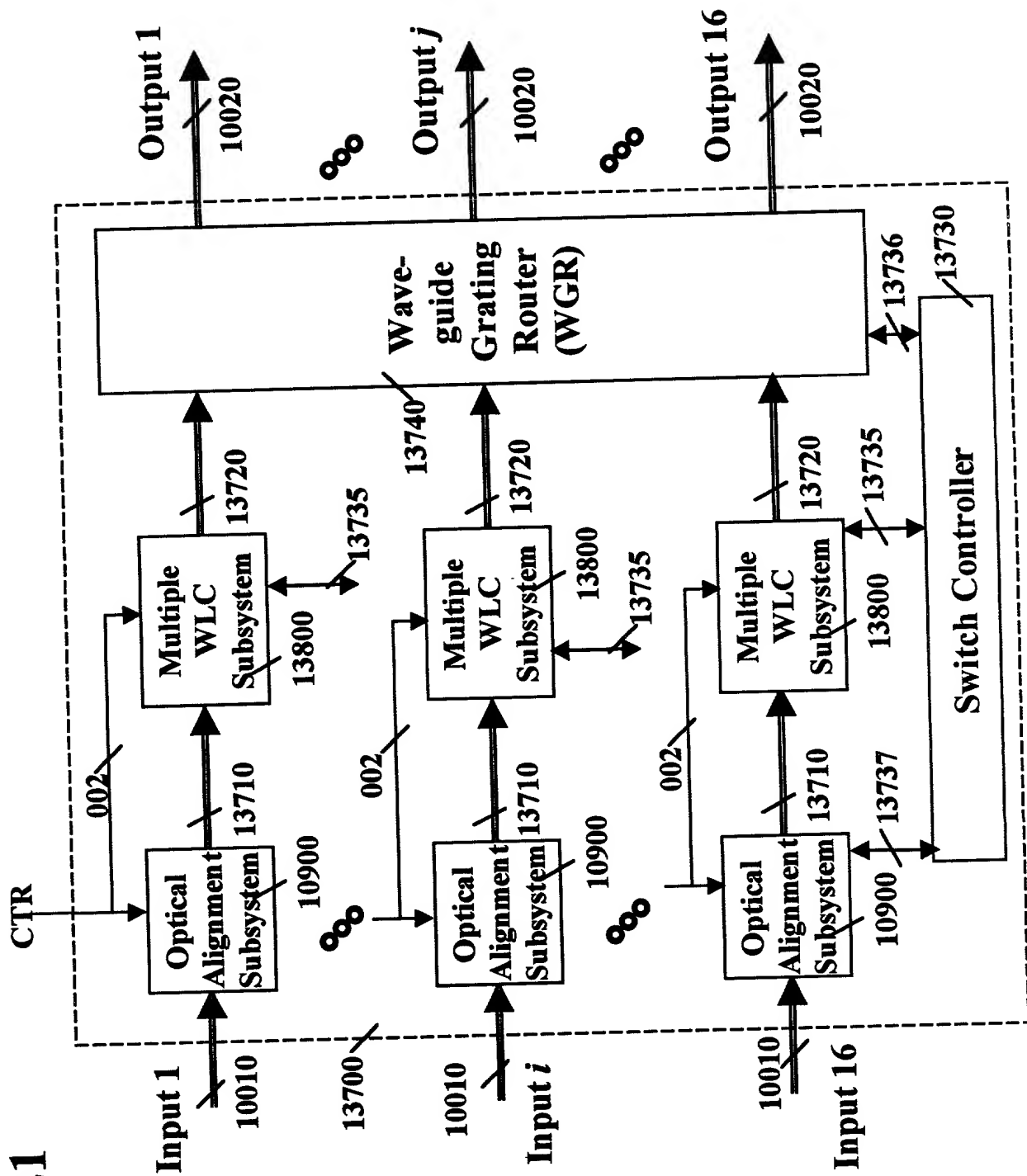


FIG. 21



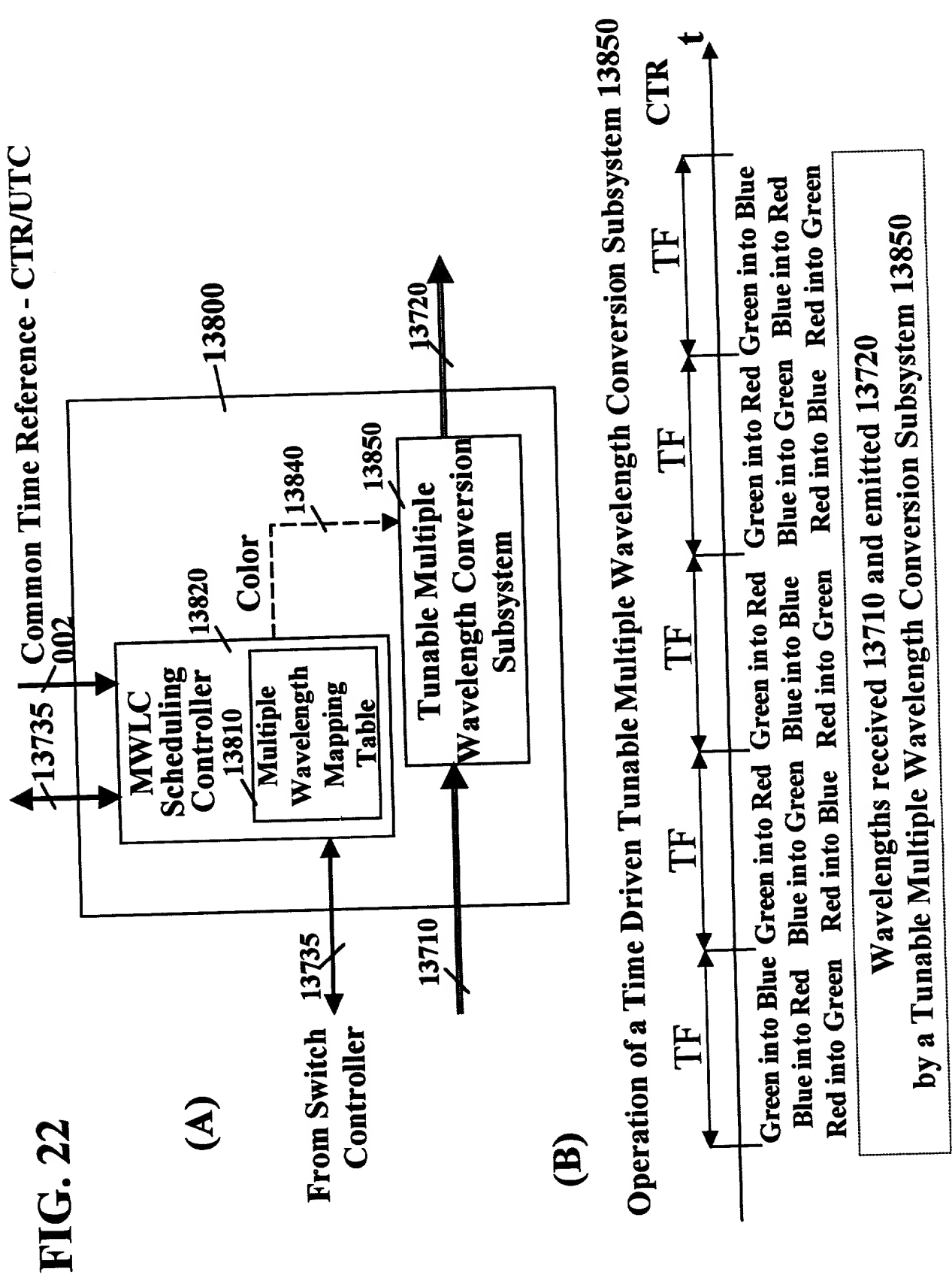


FIG. 23

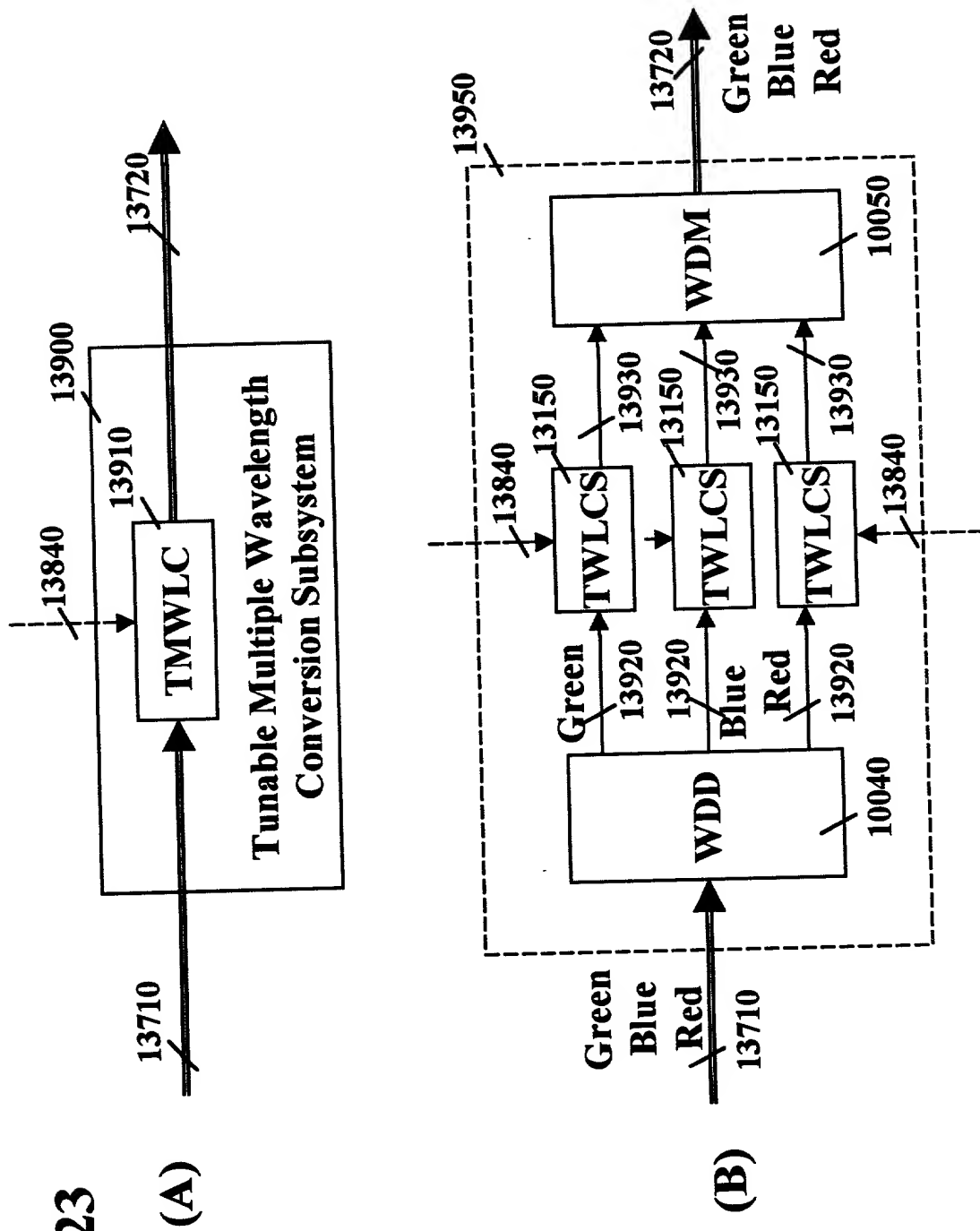


FIG. 24

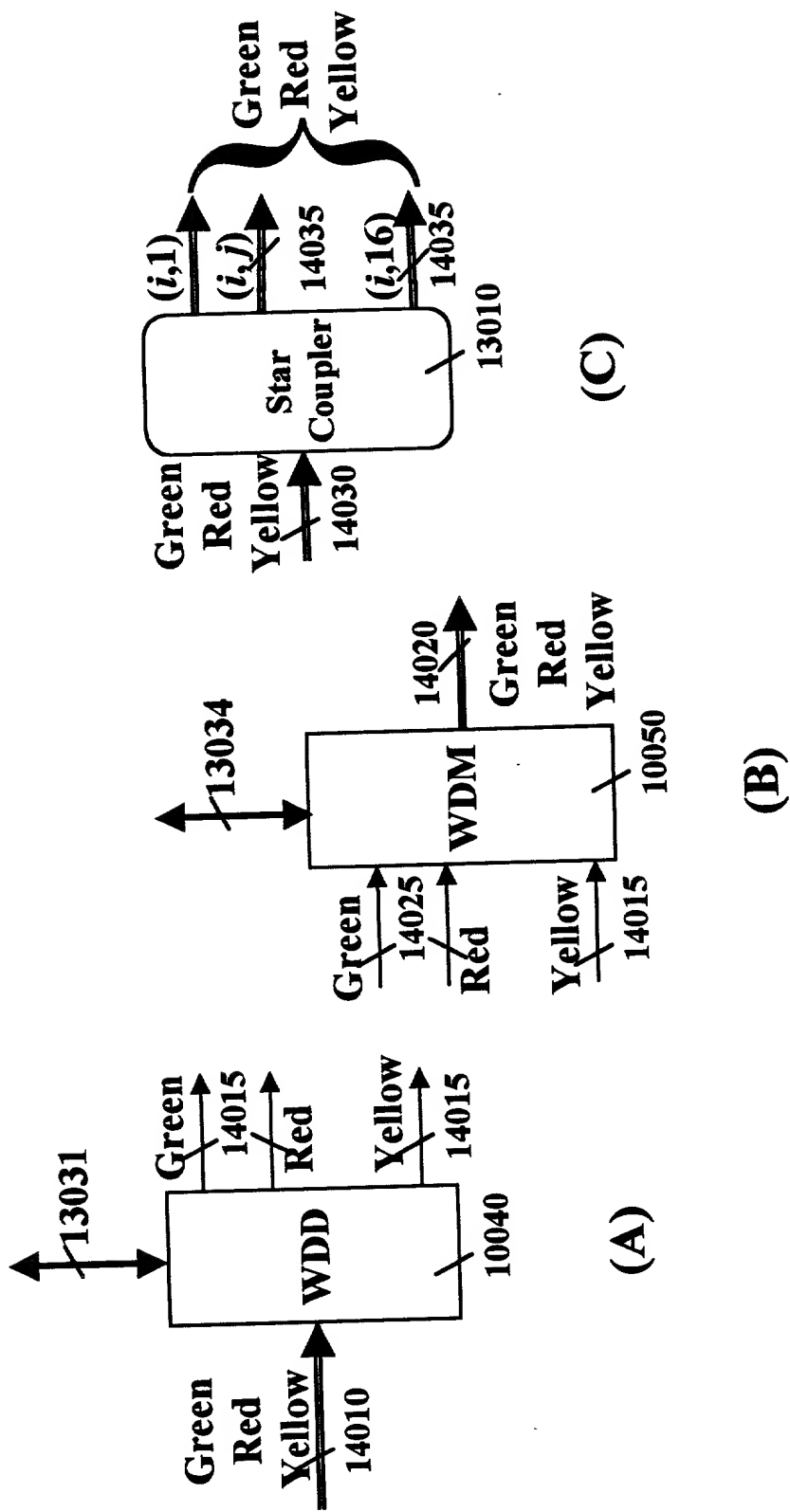




FIG. 25

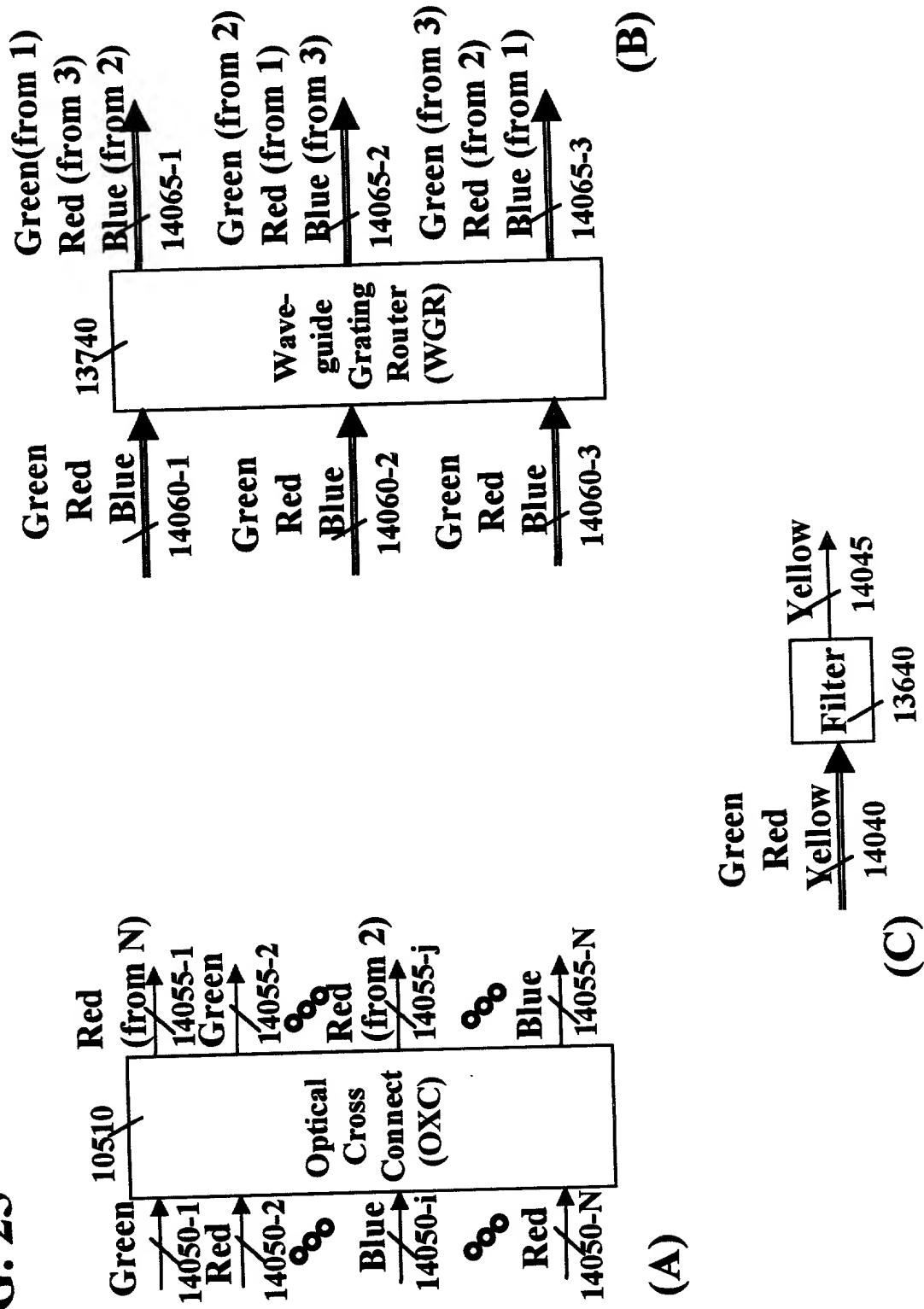


FIG. 26

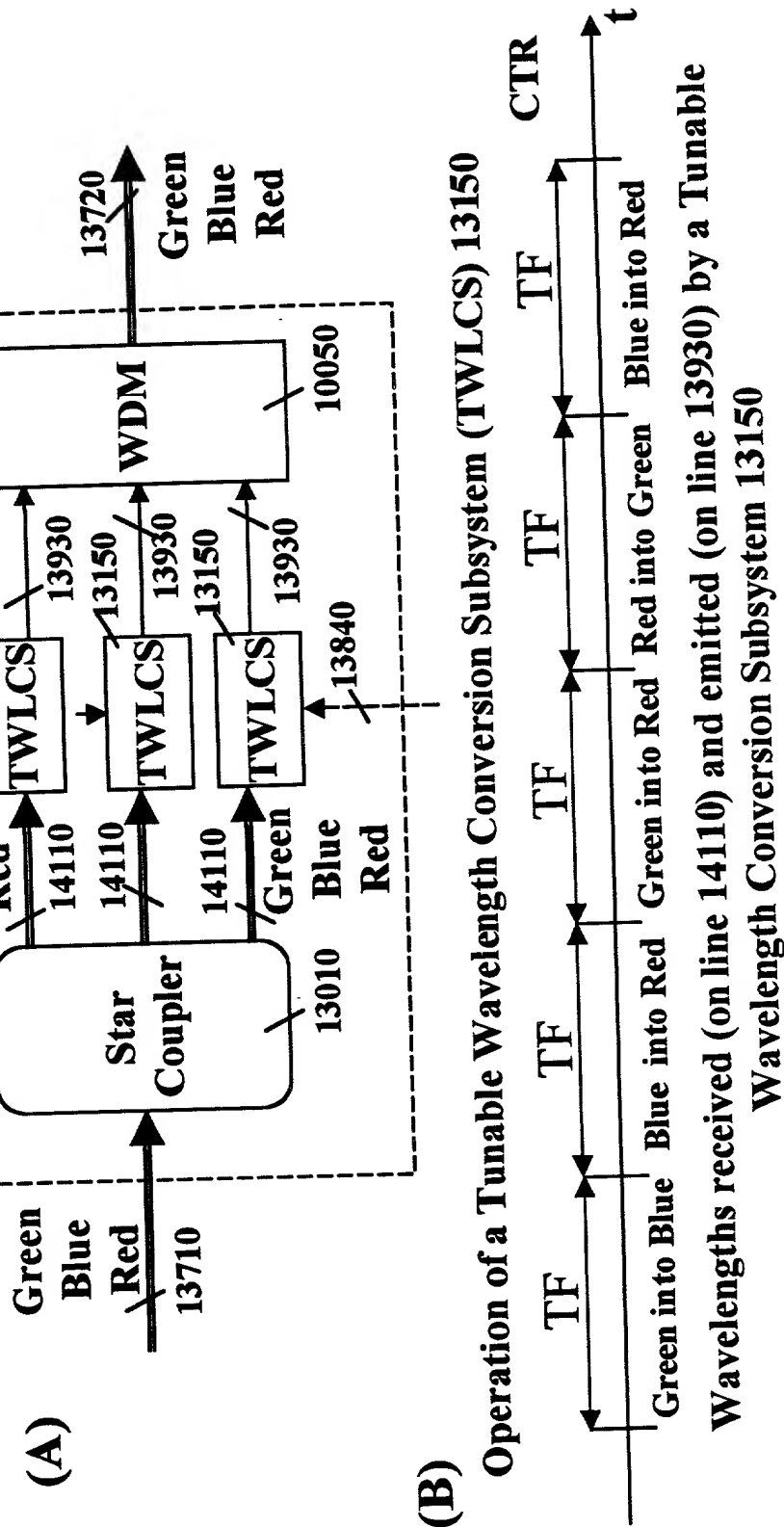


FIG. 27

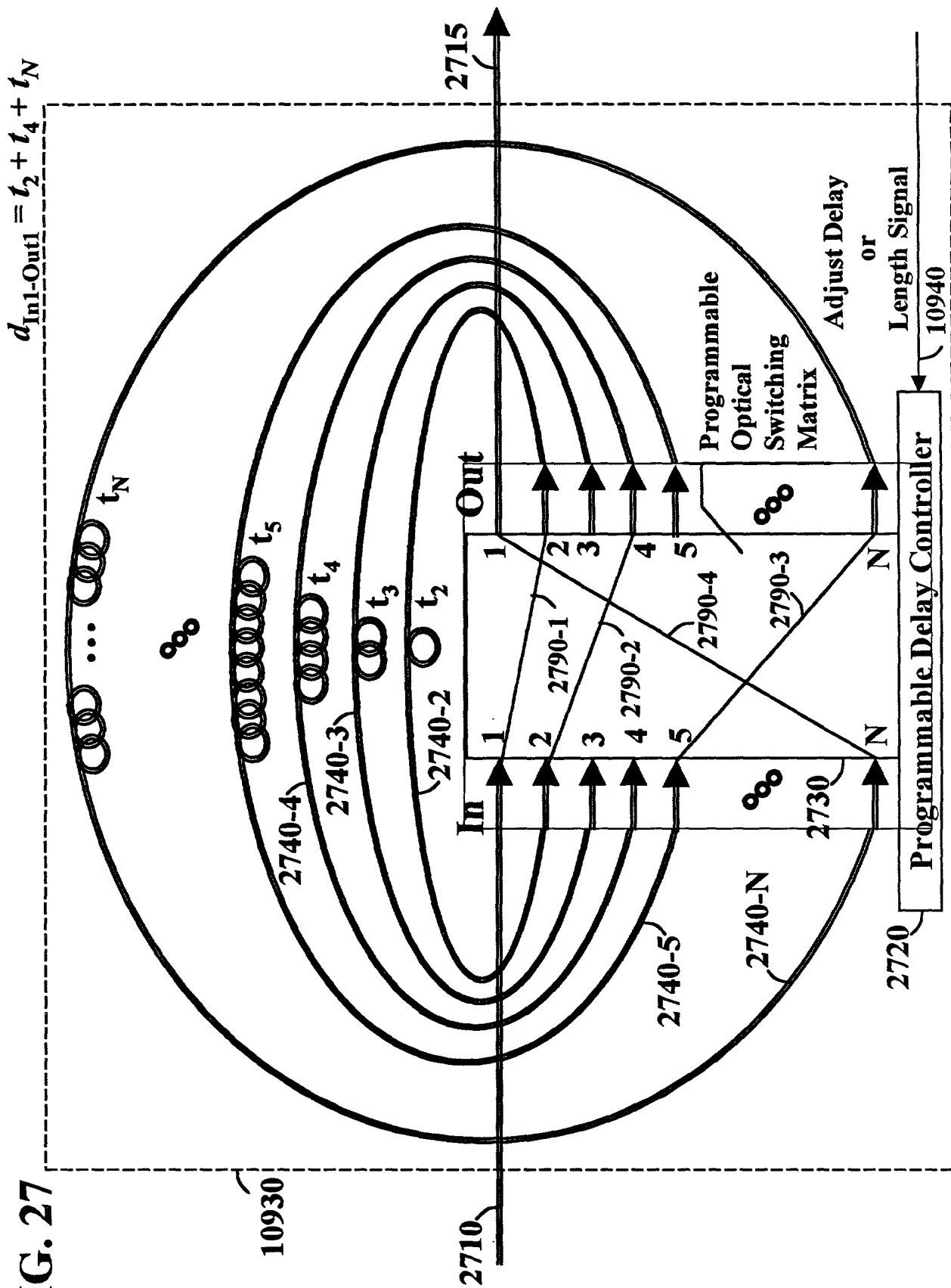
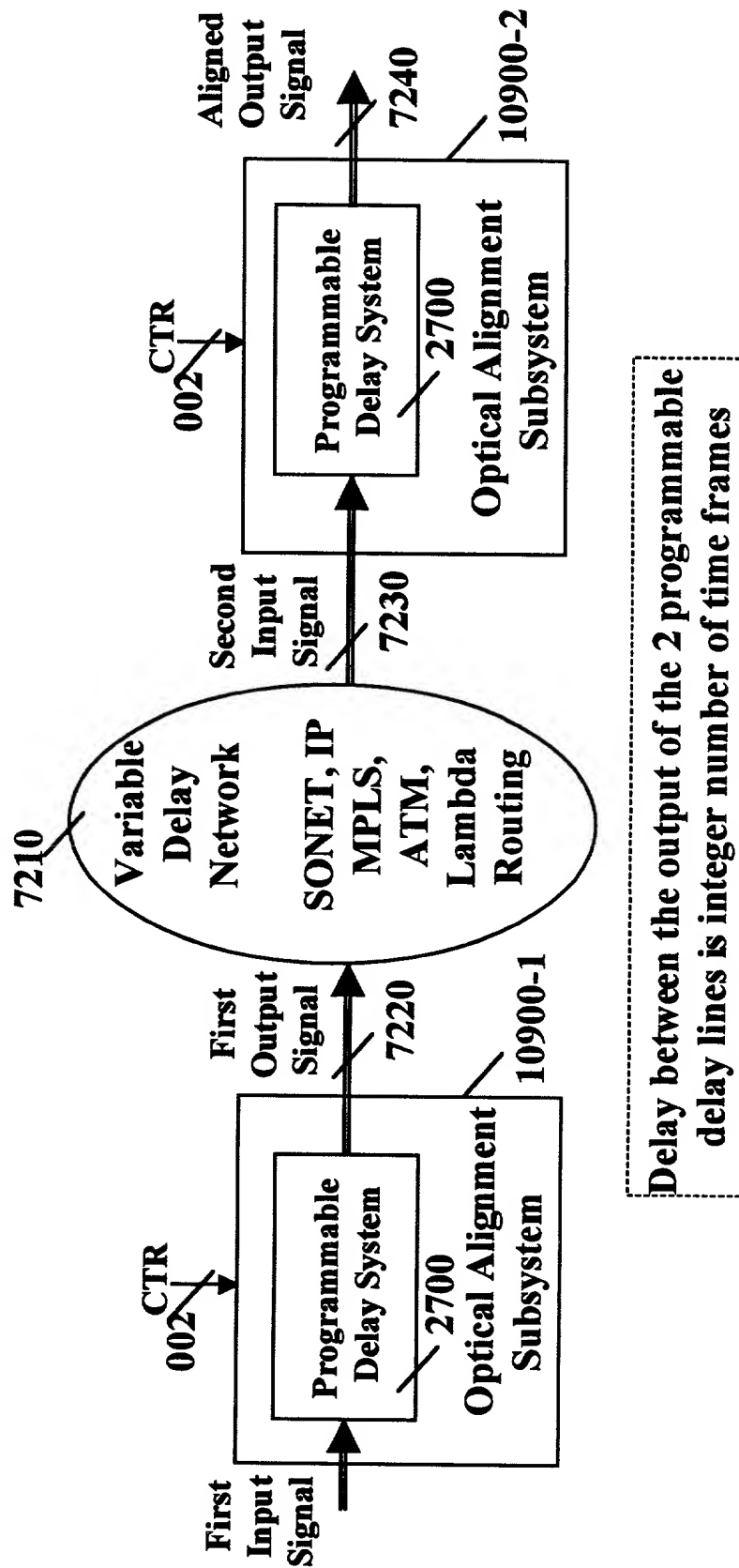


FIG. 28



**FIG. 29**

**TF Alignment of UTR(*i*) to UTC - with three input queues - principle of operation:**

The same queue is not used simultaneously for:

1. Receiving data packets from the serial link, and
2. Forwarding data packets to the switch

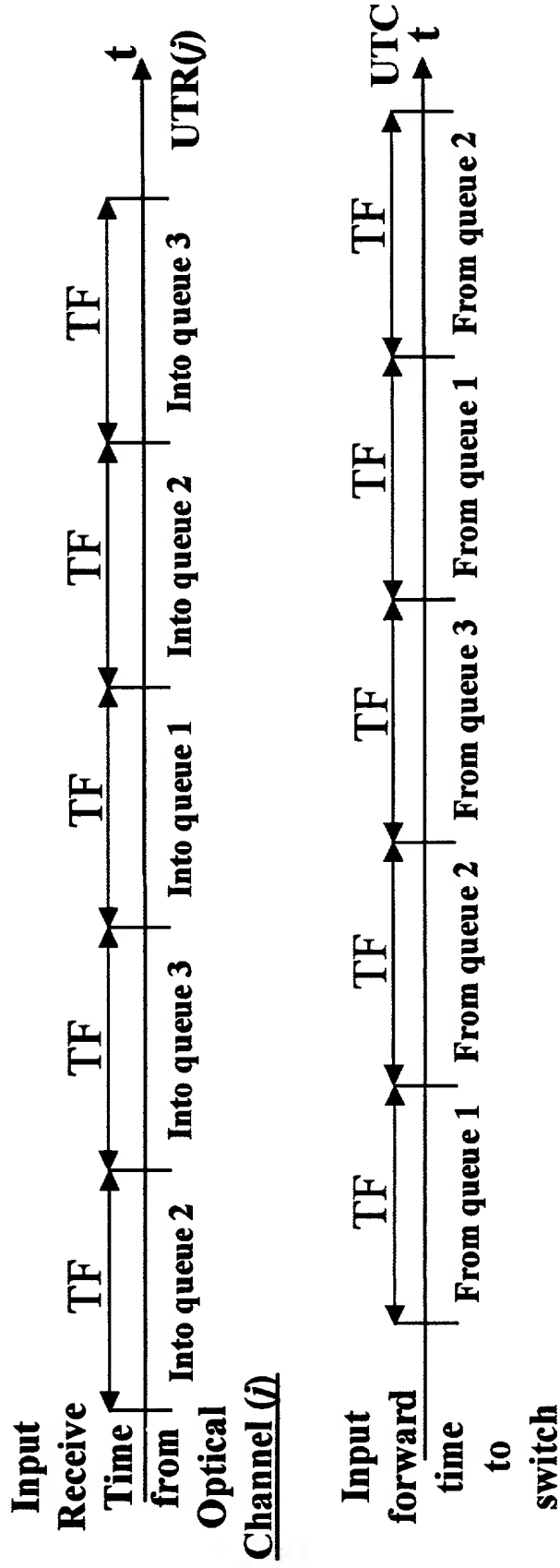
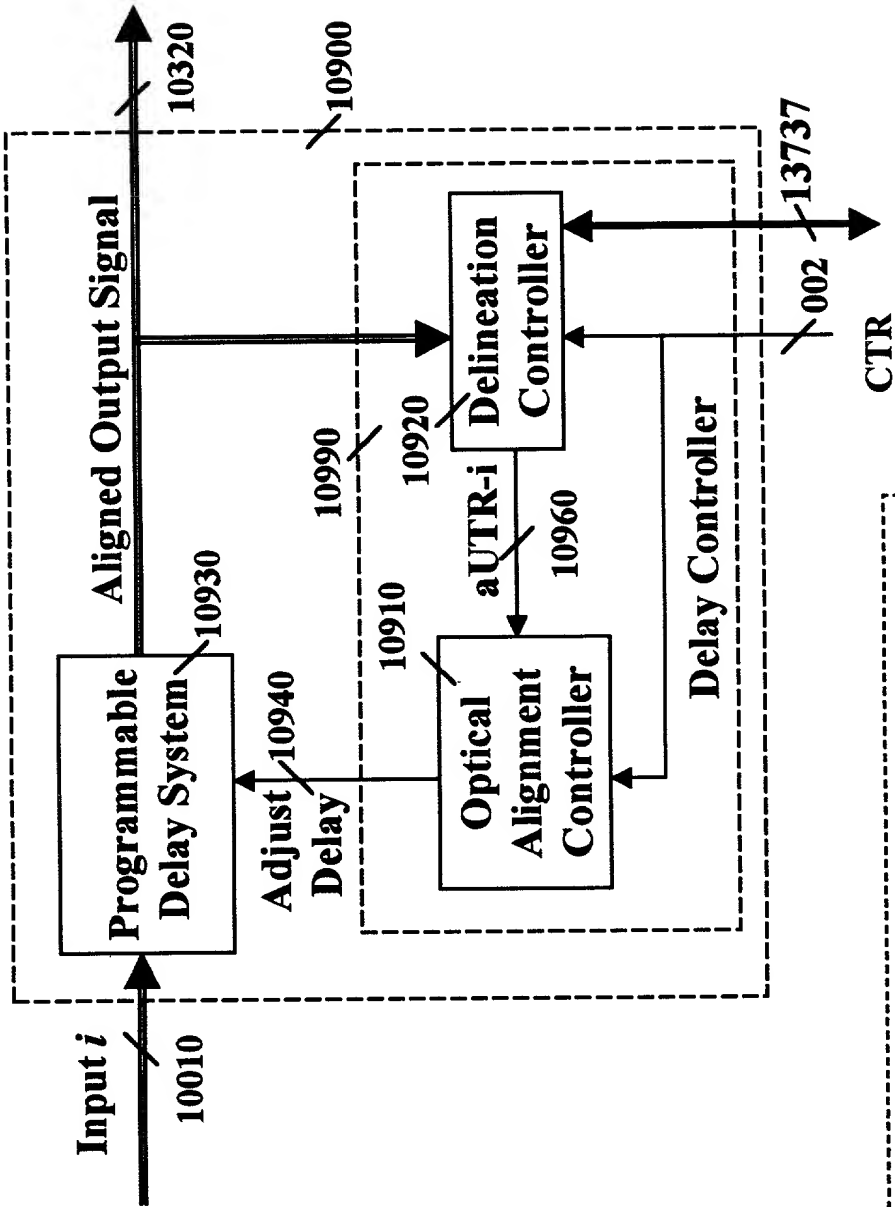


FIG. 30

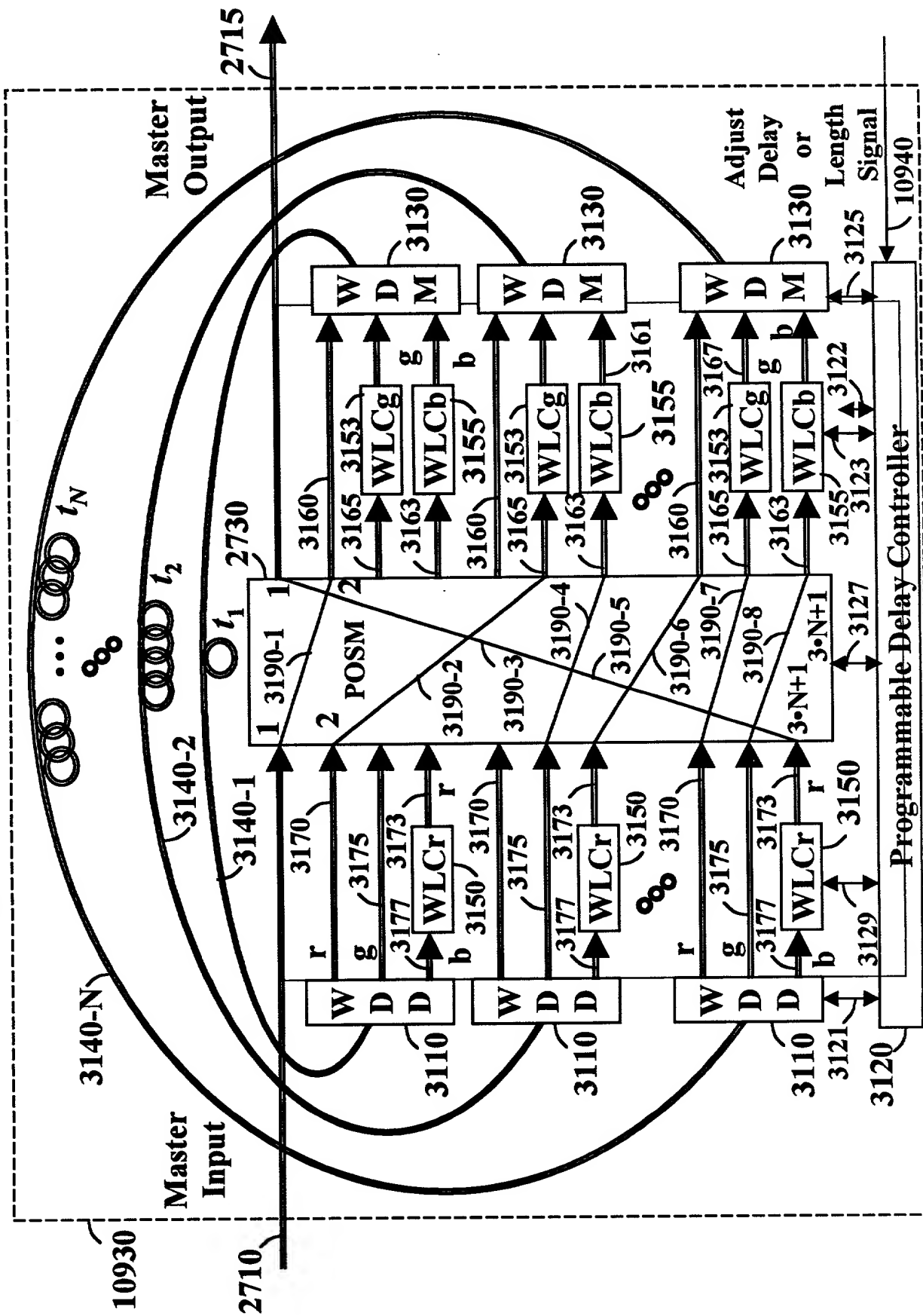


UTR-i: Unique Time Reference of input link *i*  
CTR: Common Time Reference

**FIG. 31**

## POSM: Programmable Optical Switching Matrix

$$d_{\text{In1-Out1}} = t_1 + 2 \cdot t_2 + 3 \cdot t_N$$



# POSM: Programmable Optical Switching Matrix

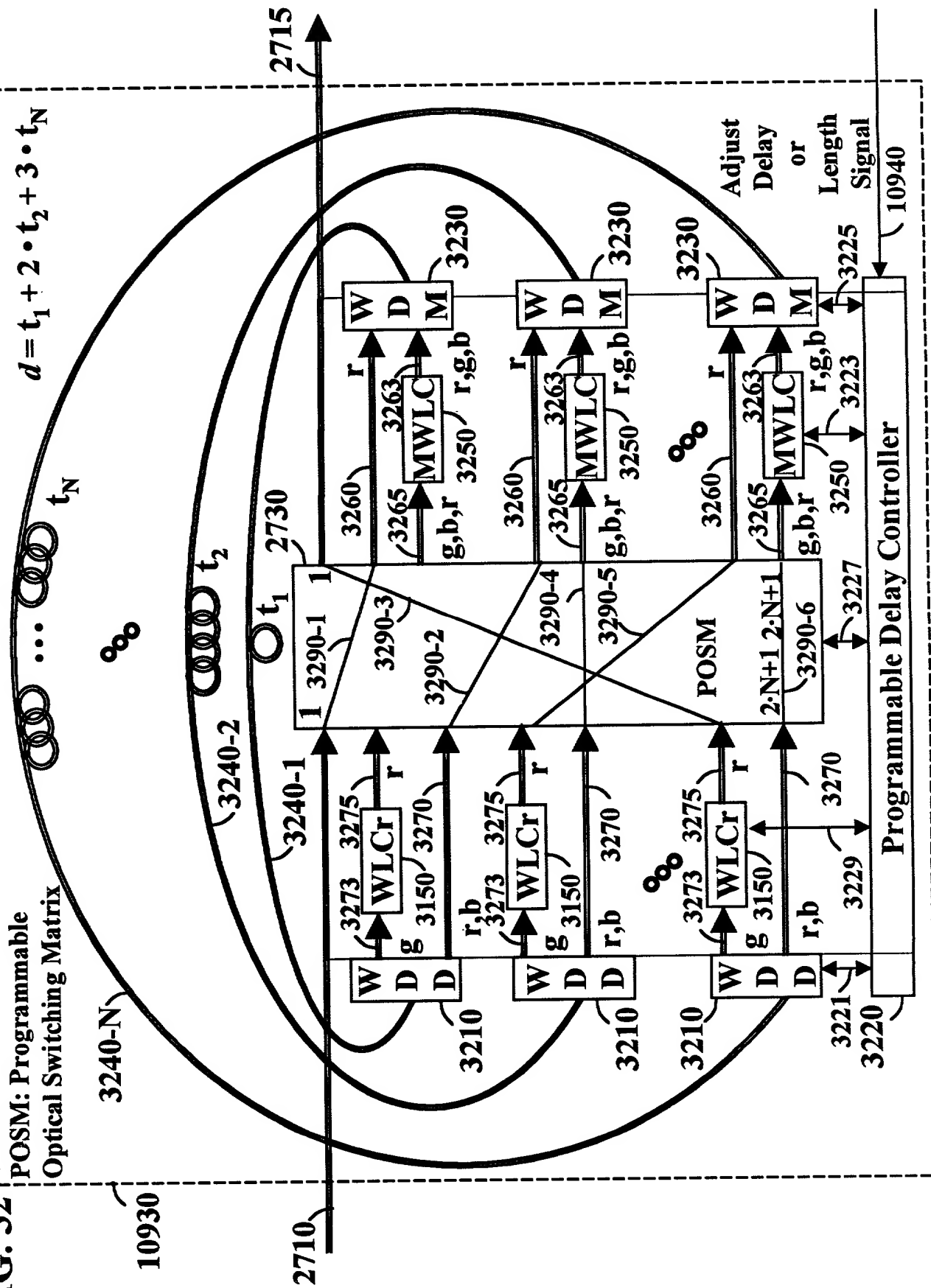
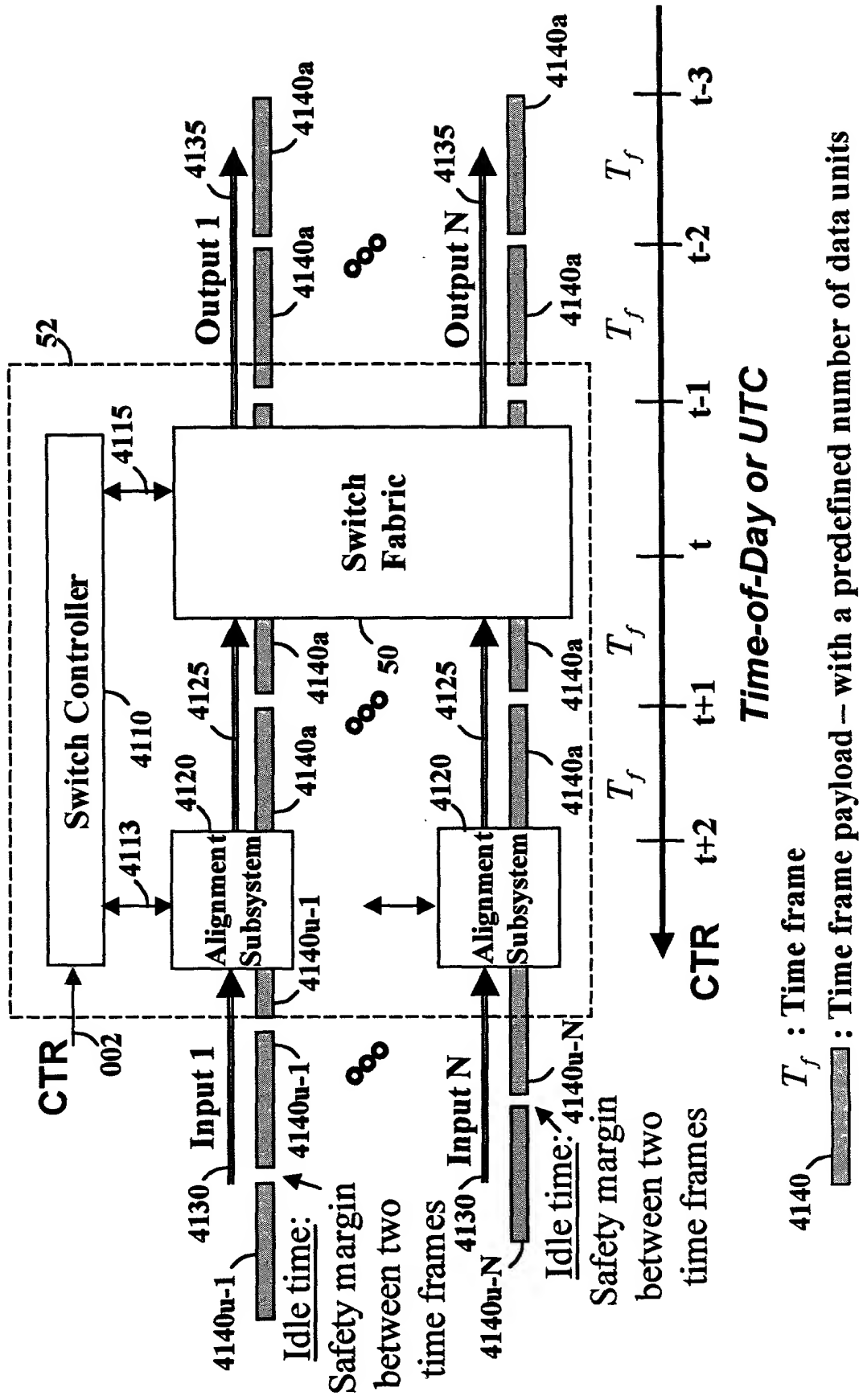




FIG. 33



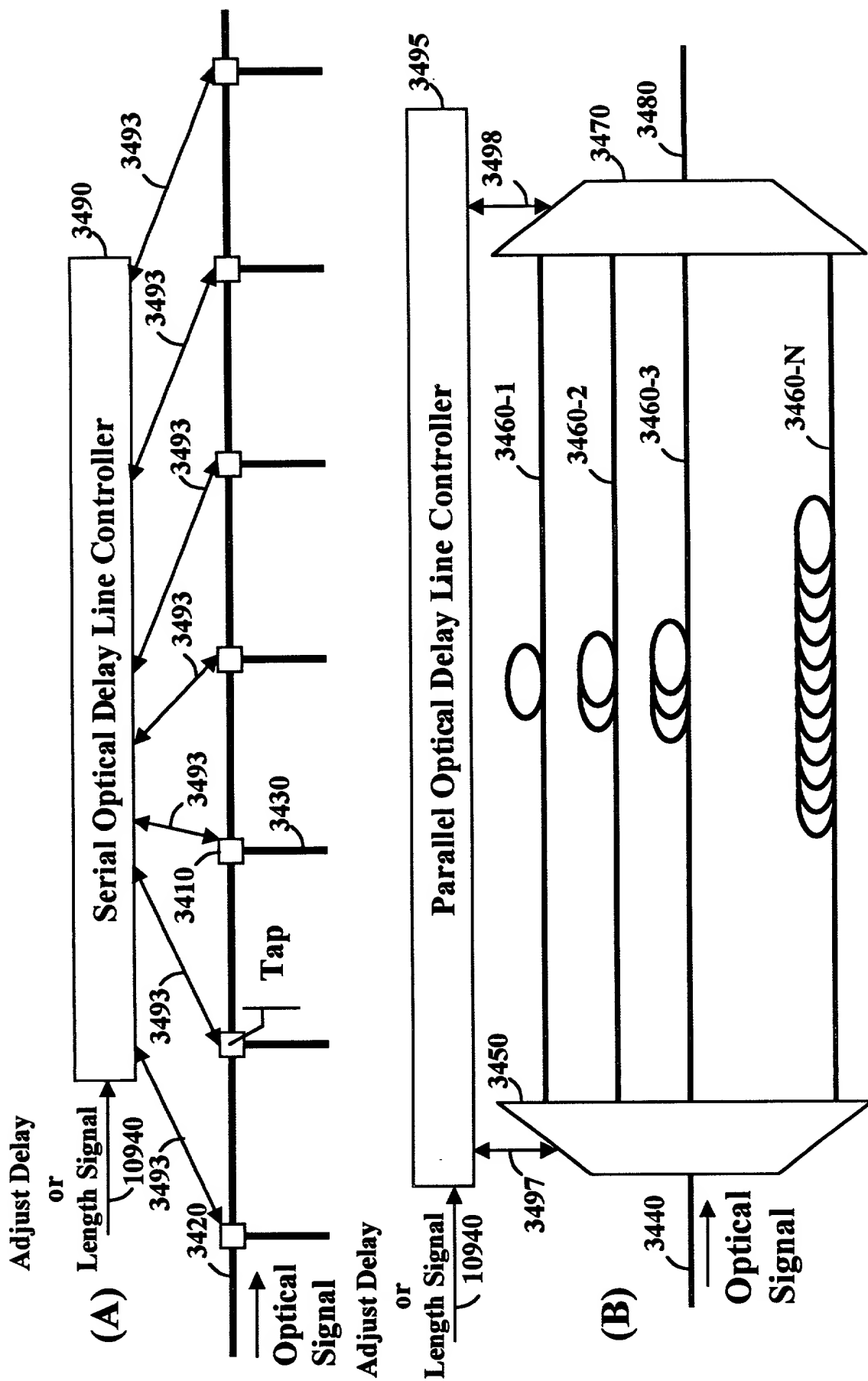


FIG. 35

POWSM: Programmable Optical Wavelength Switching Matrix  $d = t_1 + 2 \cdot t_2 + 3 \cdot t_N$

